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PROGNOSIS IN ADOLESCENT DISORDERS

Schizophrenia

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Little is known about the prognosis of emotional illness occurring during adolescence. The present concept of adolescence as a time of unusual stress with many "normal" variations in behavior tends to becloud the evaluation of prognosis. There is a paucity of factual material in the literature. Most of the material must be gleaned from prognostic studies on clinical entities which happened to include the adolescent age group.

The first discussion of the adolescent group *per se* occurred in 1923 when D. K. Henderson (10) presented six cases, and stressed considering prognosis from the total psychobiological point of view. In 1929, Kasanin and Kaufman (21) reviewed 160 patients under 16 years of age admitted to the Boston Psychopathic Hospital between 1923 and 1925. There were 21 patients diagnosed as schizophrenic. These were broken down into six true schizophrenics, and five patients were reclassified as reactive psychosis of adolescence. These consisted of patients who had an acute onset, delusions, hallucinations, and who recovered spontaneously or with treatment, did not lose affective contact, were without personality disintegration, and in retrospect the emotional situation with which the patient was dealing seemed to explain the psychopathology. The differentiation seemed to be based on the fact that the authors felt the reaction was "understandable". It would be helpful to know the subsequent course of these patients, as the follow-up was four to six years. In general, they stressed that processes were malignant when "queer, odd, unintelligible" behavior appeared. In 1942 Carter's study gave an excellent review of general prognostic studies that included adolescent patients (6). It was the most informative study to date. Seventy-eight patients between the ages of 14 and 18 admitted to Shenley Hospital received no somatic treatment or psychotherapy and were followed for three years. These included: 1) 47 schizophrenics, 2) 17 manic-depressives, 3) 8 confusional, and 4) 6 organic cases. Carter divided his patients into four outcome groups, "A" being the most favorable and "D" the least favorable. His results are given in detail as they will be compared with the results of this study. 1) Schizophrenia: A—10, B—4, C—0, D—33; 2) manic-depressive: A—12, B—2, C—3, D—0; 3) confusional: A—8, B—0, C—0, D—0; 4) chronic organic: A—0, B—0, C—0, D—6. Based on these results and an analysis of the cases, his conclusions with regard to prognostic factors were stated as follows:

1. Heredity
   a) Multiple psychotic tainting in family associated with poor prognosis.
   b) Sporadic cases of psychosis gave no poorer results than untainted.
2. Environment
   a) Eccentric parents produced faulty reactions in their children, and if they developed a psychosis, it was prolonged and less recoverable.
   b) Acute precipitating situations seemed to precede recoverable cases more often than others.
3. Personality
   a) Those showing an ability to come into contact with the world—amiability, initiative, adaptability—were associated with recovery.
   b) Those lacking the above and showing shut-in, sensitive reactions seemed unduly vulnerable to

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psychosis and are likely to accept and retain psychotic reactions.
c) Intellectual and emotional defect rarely recovered, and psychoses superimposed on mental deficiency were malignant.
4. Onset
a) The earlier the onset the worse the prognosis.
b) Acute, stormy onset preceded a stormy illness with a favorable result.
5. Symptomatology
a) Confusional states always recovered.
b) Manic-depressive had the tendency to recover though it is known to be recurrent.
c) The schizophrenics had the poorest prognosis.
6. Schizophrenic
a) General symptoms
1) Affective state—Incongruity and dissociation were associated with non-recovering cases. Apathy also was a bad sign. Good results occurred in those cases which showed a more adequate and continuous reaction.
2) Course of illness—The stormier and more florid the course, the quicker was the recovery. A bland, unchanging course was not associated with recovery.
b) Particular symptoms
1) Benign
(a) Mental confusion and disorientation.
(b) Fleeting and variable hallucinations.
2) Malignant
(a) Persistent non-varying hallucinations.
(b) Somatic delusions.
(c) Chronic catatonic symptoms, stereotypy, fatuous emotional reactions, and grotesque behavior.

In 1950, Warren and Cameron (33) presented six cases between the ages of 11 and 16 years without follow-up to confirm the concept of reactive psychosis. In the same year, in a symposium on in-patient treatment of psychotic adolescents, Bardona and MacKeith (1) presented 57 cases (9 per cent under 14 years, 75 per cent 16 and over) without follow-up. They stressed the poor outcome of reactions occurring before 14, showing that of those under 14, 80 per cent remained in the hospital after two years, and as the age increased the per cent of discharged patients increased.

It would appear that very little work on this problem has been done and that there is a great need for basic clinical work not only on the prognosis, but also on the psychopathology of adolescence. In order eventually to gain an understanding of how characteristic adolescent conflicts affect psychopathology, we must first obtain knowledge about the psychopathology based on data more precise than impressions. Therefore with the eventual goal of understanding the dynamics of adolescence and how they affect psychopathology, this study was instituted as a first step. In order to place the study in its proper perspective it will also be necessary later to study a group of normal controls and a group of adolescent out-patients. With the present project, however, we will try to compare whenever possible the prognostic factors developed both with previous studies of prognostic factors in adult patients and with similar studies of prognostic factors in adolescents. The material will be presented in two parts. This paper includes a description of the methodology, a presentation of the general results, and an analysis of the results with the schizophrenic group. A second paper will include an analysis of the results in all other adolescent conditions studied: psychoneurosis, psychopathic personality, affective disorders, and organic reactions.

Method

Consecutive admissions to the Payne Whitney Psychiatric Clinic of patients aged 12 to 18 during the period from March 1, 1936, to March 1, 1950, were selected. The total number was 201. This period was chosen to give a minimum of five years and a maximum of 19 years follow-up. The problem of how to delimit the adolescent group was resolved by setting the age limit at 12 to 18.

The Payne Whitney Psychiatric Clinic is a 108-bed private psychiatric hospital whose patients are entirely voluntary. All clinical categories are admitted, and though patients are chosen according to their amenability to psychotherapy, other types are admitted for teaching or research purposes. The patients come primarily from the middle socio-economic status, but there are also some from higher and lower levels. The intelligence average is considerably higher than that of the general population. No cases are admitted under a court's jurisdiction. Adolescent patients are admitted freely, and the Clinic usually contains 10–15 per cent of adolescents at any one time.

To gain the follow-up information, as many contacts as possible were made with each patient. These included personal interview,

letters from hospital, doctor or patient, interview with relatives, letters from relatives, phone interviews with relatives or patient. The types of contacts are summarized in table 1.

Contact was made with 170 out of the 201 patients. Seventeen of the 170 patients had to be eliminated from the final study because of insufficient information or follow-up of less than five years. There were a number of relatives who did not wish patients contacted, but in only one instance was information unequivocally refused. The final group of 153 patients includes the following per cent of the original 201 selected for study: 80 per cent of the schizophrenics, 80 per cent of the psychoneurotics, 100 per cent of the affective disorders and organics, and 50 per cent of the psychopaths. These 153 patients were divided first into diagnostic categories and then into adjustment groups based on their level of present functioning. Diagnosis in adolescent patients is a difficult problem. To establish the diagnoses in these cases the charts were reviewed. When the author's diagnosis was at variance with the therapist's, the case was reviewed with Dr. Oskar Diethelm, the Psychiatrist-in-Chief, who had supervised the treatment of all the patients in the study. When the patient's diagnosis had changed through the years (as it did in 17 cases), the material substantiating that change was reviewed and the changed diagnosis was used if it was felt to be reflected in the material presented.

The problem of the accuracy with which the follow-up information reflects the actual status of the patient was encountered when attempting to establish criteria for defining adjustment groups. It was decided that the probability of indicating the patient's true status would be greatest if the criterion was defined as the patient's level of functioning at the time contacted. The categories of adjustment level selected are as follows:

A) Functioning without impairment from symptoms at work or in the home.

B) Functioning with minimum impairment from symptoms (up to 50 per cent) at work or at home, or functioning at reduced level without symptoms.

C) Functioning with marked impairment from symptoms (greater than 50 per cent) at work or at home.

D) Unable to function, hospitalized, or suicided.

TABLE 1.—Sources of Information on 153 Patients Followed for Five Years or More

Hospital report and other contact	17
Hospital report only	25
Letter(s) only	39
Interview with patient or relative	10
Interview and other contact	16
Telephone interview	28
Telephone interview and other contact	18
Total	153

The criteria are inclusive but are handicapped by not giving a more detailed picture of the patients' adjustment. Another difficulty is that the course of the illness is neither uniformly smooth nor in one direction, particularly with schizophrenic patients. A patient who adjusts at a "B" level when contacted may have a relapse two days later, and then would be classified at a "D" level. The converse may also happen. Part of this problem is mitigated by the length of the follow-up, though an even longer period would be more helpful.

After classification into adjustment groups the patients' charts were analyzed for the factors outlined below. It was realized from the beginning that the investigation of material in charts carries with it its own hazards. The therapist's bias is often reflected in his organization of the case. Often significant features in the patient's illness never reach the abstracts. In order to minimize these effects, prominent factors were chosen and the whole chart rather than just the abstract was reviewed. The factors analyzed were:

1. *Age on admission.*
2. *Length of hospitalization:* Date of admission to date of discharge.
3. *Diagnosis:* As already described.
4. *Result of therapy:* Improved or unimproved.
5. *Prognosis:* Guarded, good, fair, poor, as stated on the chart.
6. *Onset:* The time of onset of an illness is at best an arbitrary matter and depends to a large extent on the observation of unskilled observers. It is used here as the lapse of time between the first evidence of difficulty, and either admission or in-

ability to function because of symptoms, whichever occurred first.

7. *Precipitating factors:* Again an arbitrary matter depending on a number of variables. It was designated here to apply to some palpable factor either in the environment or in the patient's conflictual feelings about the environment which could be demonstrated to be in close association with the history of the present illness.
8. *Physical:* The initial intention was to determine those physical factors which might have significant influence on the patient's psychopathology. The number was found to be so negligible that in addition the presence of an abnormal EEG was included. The abnormal EEG was never to spike-and-wave degree, but usually was abnormal class III–IV.
9. *Family history:* The presence of clinical illness in parents, grandparents, etc. Personality eccentricities alone were not considered meaningful except where they were complete enough as to leave little doubt.
10. *Past history:* This was evaluated using three criteria:

    Neuropathic traits—These were taken as evidence of some disturbance early in life. It was not possible to assess their intensity or duration which would have made this factor more meaningful. Included were temper tantrums, feeding problem, breath-holding, enuresis, night terrors, tics, nail biting, etc.

    School and social—It is said that 90 per cent of private adolescent patients come because of difficulty in school either with learning or relations with peers. School adjustment was considered good if the patient was able to pass all grades until history of present illness. If he failed one or more subjects it was considered poor. Social adjustment was evaluated from the patient's ability to relate to both individuals and groups. In the schizophrenic group seclusiveness was particularly noted. These together were taken as evidence of the patient's capacity to make an adjustment prior to his illness.
11. *Psychopathology:* In reviewing the charts, includ- nurses' notes, a psychopathological checklist that included all the items mentioned under this heading was used. This was done to insure a uniform approach to each case. The frequency of each of the items was then noted.
12. *Response to treatment:* This category was further subdivided into the length of time it took symptoms to respond, if they responded at all. Psychotherapy was defined as the patient's ability to cooperate with his therapist in discussing his emotions. For example, if the patient was able to discuss his conscious emotional attitudes to situations or people, he was considered to be participating in psychotherapy. Somatic therapy was placed under a separate heading.

Results

The outcome of the 153 patients in the study is presented in table 2 according to diagnosis. From the table it can be seen that more than half of all hospitalized adolescents in this series are diagnosed as schizophrenic. There are few affective and organic reactions, and the remaining patients are about equally divided between psychoneurosis and psychopathic personality. The difference in outcome between the schizophrenic and psychoneurotic patients is marked. Fifty-six of the 83 schizophrenic patients showed a poor adjustment ("C" or "D") many years later, while 32 of the 34 psychoneurotics showed a good ("A" or "B") adjustment. Eleven of the 20 in the psychopathic personality category have made a good adjustment, while those in the organic reactions category show a poor adjustment.

TABLE 2.—Distribution of Diagnostic Groups in Terms of Follow-up Adjustment

Diagnosis	Adjustment Groups				
	A	B	C	D	Total
Schizophrenic reactions	15	12	22	34	83
Psychoneurosis	22	10	0	2	34
Psychopathic personality	7	4	4	5	20
Affective disorders	4	3	0	1	8
Organic reactions	2	0	1	5	8
	50	29	27	47	153

The prognostic factors in the schizophrenic patients are presented below in tables which show the number of patients in each adjustment category that demonstrated a given factor. The data in the tables were analyzed with a rank t test (4). The level of statistical significance will be expressed as a probability which tells how often this distribution might be expected to occur by chance alone. For example, P = .01 means that these results would be expected to occur by chance alone only 1 in 100 times. Thus these results are considered to be very significant statistically. P = .90 means that the result might occur 90 out of 100 times by chance alone, and therefore is not considered to be statistically significant. The results of the t tests are presented with each table.

The age factor was analyzed, making the division at 14 and above as presented in table 3 and 15 and above as presented in table 4. From table 3, it can be seen there was no significant relationship between age and later outcome when the division was at 14, the

TABLE 3.—Age on Admission

Age on Admission	Adjustment Groups				P
	A	B	C	D	
Age 14 and above	14	12	21	32	P = >.80 <.90
Age 13 and below	1	0	1	2	
Total	15	12	22	34	

TABLE 4.—Age on Admission

Age on Admission	Adjustment Groups				P
	A	B	C	D	
Age 15 and above	14	12	19	28	P = >.10 <.20
Age 14 and below	1	0	3	6	
Total	15	12	22	34	

TABLE 5.—Sex

Sex	Adjustment Groups					P
	A	B	C	D	Total	
Male	10	6	11	17	−44	P = >.30 < .50
Female	5	6	11	17	−39	
Total	15	12	22	34	−83	

probability level being >.80. However, when the division was made at 15 and above, there was a marked shift in the probability level from >.80 to >.10. This would suggest that an age of 15 or above on admission tends to be related to a good outcome, while 14 or below tends to be related to a poor outcome.

Table 5 shows the number of male and female patients in each adjustment group. Analysis showed that there was no significant difference between male and female in terms of later adjustment.

The data in table 6 suggest that the acute reactions with possible toxic factors offer the best outcome. This diagnosis was only found in the "A" group in four patients. These cases were carefully reviewed to attempt to place them in a separate group called "confusional psychosis". Though confusion was prominent in each of these patients, careful study revealed schizophrenic features remaining after the acute attack. The toxic features were two unexplained temperature elevations: one influenza, and one Vincents angina. The diagnosis of schizophrenia with affective features offered the next best outcome, being found in "A" and "B", to a single extent in "C", and not at all in "D". The catatonic subgroup formed the largest percentage of all groups and in itself was not differentiating. However, in the A-B group, the reactions were generally acute; in the C-D group, they were chronic. The paranoid subgroup was not differentiating, but the lowest incidence was in "A", and the highest in "C" and "D". The hebephrenic and simple subgroups contained the smallest number of cases and were overwhelmingly in the "C" and "D" groups.

TABLE 6.—Diagnostic Sub-categories: Incidence Per Group

Diagnosis	Adjustment Groups			
	A	B	C	D
	%	%	%	%
Acute schiz., toxic features	26.7	0	0	0
Acute schiz., affective	13.3	8.3	4.5	0
Catatonic	40.0	58.4	32.0	52.9
Paranoid	13.3	25.0	32.0	26.5
Hebephrenic	0	8.3	9.0	5.9
Catatonic and paranoid	0	0	9.0	0
Simple	0	0	0	5.9
Pseudoneurotic schiz.	0	0	4.5	2.9
Unclassified	6.7	0	9.0	5.9
Total	100.0	100.0	100.0	100.0

TABLE 7.—Length of Hospitalization

Length of Hospitalization	Adjustment Groups				P
	A	B	C	D	
4 months and over	4	4	12	23	P = <.01
3 months and under	11	8	10	11	
Total	15	12	22	34	

Table 7 presents the length of hospitalization divided into three months and under, and four months and over. A larger proportion of patients in the "D" group were in the hospital four months and over than in the "A" group. Analysis indicated that there was a significant difference (at .01 level) between hospitalization three months and under and four months and over in terms of later adjustment. That is, if the patient were in the hos-

TABLE 8.—Length of Onset

Length of Onset	Adjustment Groups				P
	A	B	C	D	
Less than 12 months	15	12	7	16	P = <.001
12 months or more	0	0	15	18	
Total	15	12	22	34	

TABLE 9.—Obvious Precipitating Factor

Obvious Precipitating Factor	Adjustment Groups				P
	A	B	C	D	
Presence	11	6	12	15	P = >.10 < .20
Absence	4	6	10	19	
Total	15	12	22	34	

TABLE 10.—Physical Findings

Physical Findings	Adjustment Groups				P
	A	B	C	D	
Presence	5	5	10	5	P = >.05 < .10
Absence	10	7	12	29	
Total	15	12	22	34	

TABLE 11.—Abnormal EEG

Abnormal EEG	Adjustment Groups				P
	A	B	C	D	
Presence	3	2	7	6	P = >.80 < .90
Absence	12	10	15	28	
Total	15	12	22	34	

TABLE 12.—Family History of Emotional Illness

Family History of Emotional Illness	Adjustment Groups				P
	A	B	C	D	
Presence	11	6	13	22	P = >.90
Absence	4	6	9	12	
Total	15	12	22	34	

pital over four months, he had a significantly higher chance of a poor later outcome.

Table 8 presents the length of onset divided into less than 12 months, and 12 months or over. The division was made at this point since it was found that little could be said of the meaning of an onset of less than 12 months in terms of outcome. As can be seen in the table, all the patients who were in the "C" and "D" groups had an onset of greater than 12 months. Analysis showed that there was a statistically significant difference at the .001 level between an onset of less than 12 months and an onset of more than 12 months in terms of later outcome. If the patient had an onset of 12 months or more, he had a significantly greater chance of a poor later adjustment.

Table 9 presents the presence or absence of an obvious precipitating factor. It can be seen that a larger proportion of patients within the "A" group have an obvious precipitating factor than in the "D" group. However, analysis showed that this relationship between an obvious precipitating factor and a later good outcome only tended toward significance, the probability level being between .10 and .20.

Table 10 presents the presence or absence of physical findings. Analysis showed that the relationship between physical findings and a later good adjustment again tended toward significance with the probability level between .05 and .10.

Table 11 presents the presence of an abnormal electroencephalogram. Analysis showed that there was no significant relationship between abnormal EEG and later outcome, the probability level being greater than .80.

Table 12 presents the presence of a family history of emotional illness. Analysis showed that there was no significant relationship between a family history of emotional illness and later outcome, the probability being greater than .90.

The number of patients in each adjustment category with neuropathic traits is shown in table 13. Analysis showed that there was no significant relationship between the presence of neuropathic traits and later outcome, the probability level only being between .30 and .50.

The number of patients in each adjustment category with a history of a good or poor social adjustment prior to illness is shown in table 14. It can be seen that there is a greater proportion of patients with a poor social adjustment in the "C" and "D" categories than

TABLE 13.—Neuropathic Traits

Neuropathic Traits	Adjustment Groups				P
	A	B	C	D	
Presence	7	5	13	20	P = >.30 < .50
Absence	8	7	9	14	
Total	15	12	22	34	

TABLE 14.—Social Adjustment

Social Adjustment	Adjustment Groups				P
	A	B	C	D	
Good	13	10	6	10	P = <.001
Poor	2	2	16	24	
Total	15	12	22	34	

TABLE 15.—School Adjustment

School Adjustment	Adjustment Groups				P
	A	B	C	D	
Good	15	9	21	21	P = <.01
Poor	0	3	1	13	
Total	15	12	22	34	

TABLE 16.—Prognosis at Discharge

Prognosis at Discharge	Adjustment Groups				P
	A	B	C	D	
Unguarded	3	4	7	11	P = >.50 < .70
Guarded	12	8	15	23	
Total	15	12	22	34	

Table 17.—Prognosis at Discharge

Prognosis at Discharge	Adjustment Groups				P
	A	B	C	D	
Good	3	2	1	1	P = <.01
Poor	0	2	6	10	
Total	3	4	7	11	

TABLE 18.—Result at Discharge

Result at Discharge	Adjustment Groups				P
	A	B	C	D	
Improved	12	8	13	10	P = <.001
Unimproved	3	4	9	24	
Total	15	12	22	34	

in the "A" or "B". Analysis indicated that there was a difference significant at the .001 level between groups with a history of good and poor social adjustment in terms of later outcome. Those patients with a previous history of a poor social adjustment have a significantly greater chance of a poor outcome.

Table 15 presents the number of patients in each category with a good or poor school adjustment. There is a greater proportion of patients with a poor school adjustment in the "D" category than in the "A". Analysis showed that there is a statistically significant difference at the .01 level between groups with a good and poor school adjustment in terms of later outcome. Thus if a patient has a history of a poor school adjustment, he has a greater chance of a later poor outcome.

The number of patients in each category with a guarded or unguarded prognosis is presented in table 16. The number of patients with a good or poor prognosis is presented in table 17. Analysis showed that a guarded prognosis was not significantly related to outcome, the probability being greater than .50. However, there was a difference between groups with a good or a poor prognosis in terms of a later adjustment, significant at the .01 level. Thus, a guarded prognosis at discharge is not related to outcome, but a good or poor prognosis is significantly related to later adjustment.

The patients in each category who were improved and unimproved on discharge are presented in table 18. There are a greater proportion of patients in the C-D categories who are unimproved than in the A-B groups. Analysis showed that there is a significant difference between improved and unimproved groups in terms of later outcome at the .001 level. Thus, a patient who is unimproved on discharge has a significantly greater chance of a poor later adjustment.

Table 19 contains those psychopathological items that were found not to have a significant relationship with later outcome. It can be seen that the presence of delusions in general, paranoid, somatic and grandiose delusions, social withdrawal, motility disturbance, visual hallucinations, and depression

TABLE 19.—PSYCHOPATHOLOGY
(not significantly related to outcome)

Psychopathology	Adjustment Groups				P
	A	B	C	D	
Delusional Material					
Present	12	8	6	18	
Absent	3	4	16	16	P = >.50 < .70
Total	15	12	22	34	
Paranoid Delusions					
Present	4	4	2	4	
Absent	8	4	4	14	P = >.30 < .50
Total	12	8	6	18	
Persecutory Delusions					
Present	2	2	3	8	
Absent	10	6	3	10	P = >.10 < .20
Total	12	8	6	18	
Somatic Delusions					
Present	2	5	2	2	
Absent	10	3	4	16	P = >.30 < .50
Total	12	8	6	18	
Grandiose Delusions					
Present	2	4	0	5	
Absent	10	4	6	13	P = >.80 < .90
Total	12	8	6	18	
Social Withdrawal					
Present	2	4	0	6	
Absent	13	8	22	28	P = >.70 < .80
Total	15	12	22	34	
Motility Disturbance					
Present	8	7	10	20	
Absent	7	5	12	14	P = >.10 < .20
Total	15	12	22	34	
Visual Hallucinations					
Present	2	2	0	2	
Absent	13	10	22	32	P = >.30 < .50
Total	15	12	22	34	
Depression					
Present	10	6	9	17	
Absent	5	6	13	17	P = >.90 < .95
Total	15	12	22	34	

have no significant relationship with later outcome. Patients with delusions of persecution are found in greater proportion in the C-D groups than in the A-B groups. Analysis showed this relationship only tended toward statistical significance, the probability being between .10 and .20.

Table 20 contains those psychopathological items that were found to have a significant relationship with outcome. It can be seen that there is a greater proportion of the patients in the A-B than the C-D categories with the following psychopathologies: confusion and disorientation, and/or fear. Analysis showed that there is a significant difference between groups with confusion, disorientation, and/or fear and those without this pathology in terms of later outcome, between the .05 and .10 level, and the .001 level, respectively. Thus, a patient with confusion and/or fear has a significantly greater chance of a later good adjustment. Patients with autism, inappropriate affect and shallow affect were found in a greater proportion in the C-D categories

TABLE 20.—PSYCHOPATHOLOGY
(significantly related to outcome)

Psychopathology	Adjustment Groups				
	A	B	C	D	
Fear					
Present	7	4	4	5	
Absent	8	8	18	29	P = >.05 < .10
Total	15	12	22	34	
Reference Delusions					
Present	1	2	2	9	
Absent	11	6	4	9	P = >.02 < .05
Total	12	8	6	18	
Confusion, Disorientation					
Present	10	6	3	3	
Absent	5	6	19	31	P = <.001
Total	15	12	22	34	
Autism					
Present	1	2	13	16	
Absent	14	10	9	18	P = <.01
Total	15	12	22	34	
Inappropriate Affect					
Present	5	4	7	20	
Absent	10	8	15	14	P = <.01
Total	15	12	22	34	
Shallow Affect					
Present	3	2	7	15	
Absent	12	10	15	19	P = >.01 < .02
Total	15	12	22	34	
Auditory Hallucinations					
Present	11	7	5	11	
Absent	4	5	17	23	P = >.05 < .10
Total	15	12	22	34	

than the A-B. Analysis showed a significant difference between groups with these three factors and those who did not exhibit these symptoms at the .01 level of significance, in terms of later adjustment. Thus patients with autism, shallow and inappropriate affect have a greater chance of a later poor outcome. Patients with delusions of reference are found in greater proportion in C-D than in A-B. Analysis showed that there was a significant difference between presence and absence of delusions of reference and later outcome, between the .02 and .05 probability level. Thus a patient with delusions of reference has a greater chance of a poor later adjustment. Auditory hallucinations were found in greater proportion in the A-B than in the C-D groups.

TABLE 21.—Rapid Improvement without Relapse or Somatic Therapy

	Adjustment Groups				P
	A	B	C	D	
Rapid improvement without relapse or somatic therapy	4	1	1	0	
All other types of improvement	6	4	10	12	P = > .01 < .02
Total	10	5	11	12	

TABLE 22.—Slow Improvement with no Relapse

	Adjustment Groups				P
	A	B	C	D	
Slow improvement	3	4	5	10	
All other types of improvement	7	1	6	2	P = > .02 < .05
Total	10	5	11	12	

TABLE 23.—Improvement with one Relapse

	Adjustment Groups				P
	A	B	C	D	
Improvement with one relapse	3	0	3	1	
All other types of improvement	7	5	8	11	P = > .30 < .50
Total	10	5	11	12	

Analysis showed that the relationship between auditory hallucinations and a later good outcome was significant between the .05 and .10 levels.

The patients in each adjustment category who had a rapid improvement without relapse or somatic therapy are shown in table 21.

There is a greater proportion in the "A" group than in the "D" group who showed rapid improvement without relapse. Analysis showed that there is a significant difference between the rapid improvement group and all other improvement groups at the .01 level, in terms of later adjustment. Thus if a patient has a rapid improvement, he has a much better chance of a later good adjustment.

In tables 22, 23, and 24 are shown a breakdown of improvement into slow improvement, improvement with one relapse, and improvement with more than one relapse, each compared with all other types of improvement. Analysis showed that there was not a significant relationship between improvement with one relapse or improvement with more than one relapse, and later outcome. However, there was a significant difference between slow improvement and all other types of improvement in terms of later adjustment, at less than the .05 level. A patient with a slow improvement has a greater chance of a poor outcome.

The patients in each adjustment category who showed improvement with somatic therapy are shown in table 25. There is a greater proportion of patients who did not improve in the "D" category than in the "A" category. Analysis showed that there is a significant difference at less than the .01 level between the improved and the unimproved groups of patients in terms of later adjustment. A patient

TABLE 24.—Improvement with more than one Relapse

	Adjustment Groups				P
	A	B	C	D	
Improvement with more than one relapse	0	0	2	1	
All other types of improvement	10	5	9	11	P = > .30 < .50
Total	10	5	11	12	

who does not improve with somatic therapy has a significantly greater chance of a poor later adjustment.

The patients in each adjustment category who responded to psychotherapy are shown in table 26. Analysis showed that there was not a significant relationship between response to psychotherapy and later outcome.

The patients in each adjustment category who had subsequent hospitalization are shown in table 27. Re-hospitalization appears to be related to poor outcome at a significant level of less than .001. In table 28 those who were rehospitalized were divided into less than three years and three years and over. There is a greater proportion of patients with more than three years in the "D" group than in the "A" group. Analysis showed this relationship to be significant at the .001 level.

TABLE 25.—Improvement with Somatic Therapy

	Adjustment Groups				P
	A	B	C	D	
Improvement	2	3	3	1	
No improvement	0	0	2	8	P = <.01
Total	2	3	5	9	

TABLE 26.—Response to Psychotherapy

	Adjustment Groups				P
	A	B	C	D	
Response	4	2	11	4	
No response	11	10	11	30	P = >.20 < .30
Total	15	12	22	34	

TABLE 27.—Hospitalization (Follow-up)

	Adjustment Groups				P
	A	B	C	D	
No hospitalization	10	2	5	3	
Hospitalization	5	10	17	31	P = <.001
Total	15	12	22	34	

TABLE 28.—Length of Hospitalization (Follow-up)

	Adjustment Groups				P
	A	B	C	D	
Less than 1–3 years	5	9	10	7	
3–12 years and over	0	1	7	24	P = <.001
Total	5	10	17	31	

Discussion

Age: The age of the patients on admission becomes meaningful prognostically at the age of 15. If below, it indicates a poorer prognosis and if 15 or above, a better prognosis. This confirms the impression of the prognostic meaning of age in adolescents, and tends to agree with the finding in adults as described by Rennie (26) that age is a significant factor in prognosis.

Sex: This agrees with Carter's (6) results in adolescent patients, but it differs from adult data where Rennie (25) found that female patients do slightly better.

Diagnosis: In view of the literature on the reactive and confusional psychoses, it is unusual that some were not found in this large group. Otherwise the findings in patients with a hebephrenic or a simple schizophrenic diagnosis agree with other adolescent studies. It would seem that paranoid and catatonic features are not as significant here as Rennie (25) found them to be in adults. In his study of 100 recovered schizophrenics, the paranoid diagnosis had the highest incidence, and the catatonic the next highest. In adolescents, the catatonic and paranoid features do not seem of help prognostically.

Result at discharge: The rate of improvement agrees with Carter's (6) results but seems to be slightly higher than Rennie (26) found in adults.

Prognosis: The prevalent tendency to use "guarded" as a prognosis tends to confirm the uncertainty felt about prognosis in adolescence. It also tends to impair the meaning of the term. It would seem that if the psychiatrist feels certain enough to give a good or a poor prognosis, he is usually accurate. However, in the great majority of cases the psychiatrist's uncertainty becomes reflected in the use of "guarded".

Length of onset: Carter (6) found in his

study that acute reactions were favorable. While it is not possible to confirm that finding in this study, the data are in agreement with previous studies showing that an onset of more than one year indicates a poor outcome. Experience shows, however, that there are occasional patients with a long onset who do well.

Obvious precipitating factor: This finding is in disagreement with Carter's (6) studies where he found a precipitating factor a favorable prognostic sign. It also disagrees with Rennie's (25) finding in adults, in which he compared 100 recovered schizophrenics with 500 schizophrenics and found the presence of a precipitating factor a favorable prognostic sign.

Family history of emotional illness: This finding disagrees with Carter's (6) studies where he found that multiple illness showed a poor outcome. It also disagrees with Rennie's (25) finding in adults that a positive family history was a favorable prognostic sign.

Social adjustment: This is one of the most significant findings. A pre-illness history of a poor social adjustment indicates a poor prognosis. This agrees with Carter's (6) findings but differs from Rennie's (25) in adults where he found that the presence of schizoid personality traits was a sign of favorable outcome. Thus, a poor social adjustment during or before adolescence seems to be more meaningful than if it occurs in adulthood.

Psychopathology: The presence of confusion and/or an affect of fear was most significantly related to a good outcome. Autism, shallow affect and inappropriate affect were most significantly related to a poor outcome. Auditory hallucinations tend to be on the favorable side, while delusions of reference and persecution tend to be on the unfavorable side. These findings agree with Carter's (6) results except for the fact that somatic delusions were not related to a poor outcome in this study. It disagrees in the same respect with Rennie's (26) findings in adults that somatic delusions were associated with a poor prognosis.

Hospitalization: It is striking that of all schizophrenics in this series hospitalized for the first time during adolescence, 62 per cent have marked impairment of functioning 10 years later, or well beyond the chronological age of adolescence. Only 15 per cent managed to adjust without re-entering a hospital, while 85 per cent required additional hospitalization. In the "D" group, 71 per cent required more than three years of additional hospitalization.

Response to psychotherapy: Few patients in any of the groups participated in psychotherapy. However, this did not seem to adversely effect the outcome. However, the chief criterion for participation was verbal response; adolescents are well known to have difficulty with verbalization. It may be that some of the patients participated on a non-verbal level.

Conclusions

1. In this study, 67 per cent of all schizophrenic patients hospitalized during adolescence had a poor outcome.

2. The prognostic factors analyzed fall into three groups:

a) Factors related to an unfavorable outcome:
   1) Age of 14 or below on admission
   2) Diagnostic sub-group of hebephrenic or simple schizophrenia
   3) Length of hospitalization of more than four months
   4) Length of onset of more than 12 months
   5) History of poor pre-illness social adjustment
   6) History of poor pre-illness school adjustment
   7) Poor prognosis at discharge
   8) Unimproved at discharge
   9) Autism, shallow and inappropriate affect exhibited in the psychopathology
   10) Lack of improvement with somatic therapy or slow improvement

b) Factors related to a favorable outcome:
   1) Age of 15 or over
   2) Diagnosis of affective features or possible toxic features
   3) History of good pre-illness social adjustment
   4) History of good pre-illness school adjustment
   5) Good prognosis at discharge

6) Confusion, disorientation, and/or fear exhibited in the psychopathology
7) Rapid improvement without relapse

c) Factors not related to outcome:
1) Sex
2) Family history of emotional illness
3) Presence of obvious precipitating factor
4) Presence of neuropathic traits
5) Response to psychotherapy

Summary

1. Follow-up information with a span of 5 to 19 years was obtained on 153 adolescent patients between the ages of 12 and 18, hospitalized at the Payne Whitney Psychiatric Clinic.

2. The patients were divided into four outcome groups based on their present level of functioning. The criteria of the groups ranged from symptoms free to incapacitation necessitating hospital care.

3. For the schizophrenic patients in each adjustment group a rank t test was used to determine the relationship between clinical factors used for prognosis and actual later adjustment.

4. The significant prognostic factors in schizophrenia were compared with previous studies of adolescents and adults.

5. The conclusions present the prognostic factors as: related to favorable outcome, unfavorable outcome, or not related.

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VICISSITUDES IN GUIDANCE OF PARENTS OF SCHIZOPHRENIC CHILDREN[1]

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Out of more than 400 admissions a year to the Children's Psychiatric Ward at Bellevue Hospital, New York City, a few youngsters presented a special constellation. They were regressed schizophrenic children who had seemingly normal parents. The fact that warm and intelligent parents had very sick children seemed to emphasize the absence of severe environmental trauma. Although parental health did not exclude the genetic predisposition to schizophrenia, still it was somewhat surprising to see such extreme differences between parents and their children.

It was of interest to see what the parent-child relationship was in cases where the discrepancy in functioning of parents and children was so overwhelming. Therapeutic guidance of such parents could yield interesting findings and could, at the same time, help the parents in the difficult task of raising schizophrenic children.

In distinction from psychotherapy, therapeutic guidance has more limited goals, often serving as a preparatory stage for psychotherapy. In contrast to therapy in guidance the psychiatrist does not encourage any venture into the unconscious, nor does he interpret on that level.

The size of the group was small (six couples); the parents were separated into two groups—mothers and fathers. Although at the outset the separation was not planned, it had to be done eventually for these parents could not afford a baby sitter every week. For 6 months the fathers and mothers met on alternate Saturdays.

Although the planned criteria for selection of the parents were few (parents—warm, intelligent, motivated for therapy; children—regressed schizophrenic), additional factors contributing to the homogeneity of the group were discovered both in the parents and children, after the group was formed.

Parents: 1. Were willing to keep the children at home rather than seek placement. 2. Never separated and never contemplated divorce (1st marriage for both). 3. Middle class—income around $5,000 a year. 4. Consulted many specialists before coming to Bellevue (G.P., psychiatrists, psychologists, osteopaths, chiropractors).

Children: 1. Planned. 2. First born. 3. Normal pregnancy, delivery and labor. 4. Five or six years old. 5. Younger siblings were not schizophrenic (2 had no siblings). 6. Long duration of symptoms. 7. Could not play with other children. 8. Had feeding and toilet training problems, but no sleep disturbance. 9. No internalized objects (11).

One couple discontinued the treatment after the third session. They believed that their child was not as disturbed as the children of the other parents and, as a consequense, could not accept the diagnosis of schizophrenia. These parents were inadequately selected. In contrast to the rest their daughter had an acute onset of symptoms and was never before diagnosed as mentally ill. (On investigation it was evident that actually the child had severe difficulties as early as the age of two years, a fact forgotten by the parents.)

She was 7-years-old when her 16-year-old brother eloped with a 20-year-old girl. This seemingly precipitated an acute psychotic attack. Mrs. T. could not accept the daughter's sickness. She said, "I would rather see my daughter dead than schizophrenic." Mr. T. could see no comparison in the symptoms his child had shown with the rest of the children. His daughter had attended a regular school prior to her hospitalization contrary to the other children of our group. He felt superior because of this and also because he had a slightly higher income than the rest.

The mistake in selecting the T. couple was based on the fact that I did not take into account the duration of the severe symptoms in the child. It was too short to produce as strong a motivation for seeking help as in the

[1] Read at the Annual Meeting of the A.P.A., Chicago, May 1, 1956.

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other parents. In addition both Mr. and Mrs. T., although socially well functioning, had too much anxiety to afford group participation. They felt that their child was different, not as sick as the rest, "my daughter goes to a regular school," Mrs. T. commented. While the other members of the group were happy to find out that their children were not brain damaged, Mr. and Mrs. T. were not prepared to accept their child's true diagnosis.

This brings to mind an important problem, namely should the parents of schizophrenic children be told the truth about the diagnosis? It seems that in the case of a very severely regressed child who had mistakenly been diagnosed as defective or brain damaged, one should tell the parents the truth. It gives them hope of improvement, and they are ready to accept certain limitations of emotional development that were implied by the diagnosis of schizophrenia. However, since the word schizophrenia is often frightening, despite extensive explanation, one should be cautious in pronouncing it. Substitutes such as "atypical child", although evasive, might be of use in the milder cases (15). Of course in the description of the expectations, goals in therapy and prognosis, one has to be frank and clear no matter what term one uses. In our group we did not have any reason to hide the real name of the diagnosis. This was due to the hopeless outlook which the parents had prior to their arrival to Bellevue.

Thus, the avoidance of a rigid approach seems most advisable in dealing with the problem of telling the family the diagnosis of the sick child.

Resistance to treatment became manifest from the onset despite strong conscious motivation for guidance. It was expressed in various ways. One of them was the desire to obtain direct answers to their questions. The questions asked were of the following nature: Is schizophrenia curable? What is the influence of the sick child on the healthy siblings? Is it hereditary? What is the parent's role in the etiology of schizophrenia? The pattern of behavior adopted by respective members was parallel in mothers and fathers of the same child. For instance, Mr. Q. tried jokingly to turn the discussion to the psychiatrist's own problems, Mrs. Q. would talk in a joking way about the most disturbing symptoms of her child. The joking in both seemed to be a resistance to approaching the anxiety provoking problems. Mr. C. would talk about sexual impulses, and his wife would relate sexual fantasies and dreams. This parallelism is attitudes and behavior during sessions was more than just an imitative pattern. It seemed to evolve from unconscious motivations for object choice. Many similarities in the personality traits of couples became apparent: Mr. and Mrs. X. were both reserved and polite; Mr. and Mrs. L. seemed to be shy, insecure and frightened; Mr. and Mrs. T. were distant and acting superior; Mr. and Mrs. S. were somewhat inadequate and often felt out of place.

An unwritten code of ethics developed which did not permit the repetition of certain intimate topics discussed in the group. When Mrs. C. confessed her erotic dreams, she was safe in her belief that her husband will never learn about it. (She said so.) The same was true of Mr. T. when he spoke about the beautiful models he painted. The above does not mean that there was no communication between the couples; it means, however, that certain types of communication were withheld.

Most of the parents had a definite impression that there was something in their behavior towards the child which had caused the child's illness. Time was spent in searching for a possible reason for mishandlings or errors. They were ready to take the blame for the child's condition rather than accept the concept of a developmental lag. The idea that an environmental cause could be the only one responsible for the schizophrenic process in the children seemed to them more optimistic, even if the parents had to take all the blame for it. Without exception they were all ridden by guilt feelings, and it took a while to make them accept the developmental lag with which their children were born. In fact the resistance to accept this view was so great that in the beginning information about the pathology in close relatives was consciously withheld. Only after the group was substantially advanced, was a more accurate picture of the psychopathology in the family disclosed. Then it became clear that every parent had at least one disturbed relative.

The initial impression of the parents was that of people with mild neurotic and character problems. The information about the relatives, however, disclosed that the paternal grandmother of Q. was schizophrenic and had electroconvulsive therapy; that the paternal grandfather of S. was a sociopath who was in prison for exhibiting himself in front of little girls in public parks and movies; that L.'s paternal uncle was committed to a state hospital; that the C. family had several uncles and cousins severely disturbed although they were not hospitalized. Although the parents did not show overt pathology, they all had disturbed relatives.

It soon became evident that some of the children's symptoms could also be detected in a mild form in their respective parents. For example, Mrs. Q. could never stand anyone embracing her, not even her husband; she was uncomfortable when she had someone's arms around her and would not sit on a couch between two people. Recognized as a symptom, in the mother it never assumed exaggerated proportions and thus did not interfere in her functioning. However, in her six-year-old son the same symptom was so intense that he could not stand anyone's touching him at all and would avoid physical contact even with his parents.

While mentioning children's fears, the fathers and mothers spoke about their own anxieties. Mr. L., as a child, was afraid of fire engines, and even at present he is fearful, especially of being a failure at work. While discussing it, he would become pale and covered with sweat. Mr. X. feared small and closed rooms; Mrs. C. was afraid of escalators when riding down, but she would overcome that fear after short hesitation. Mrs. Q. had the same fear, only it was less intense and had never been verbalized before. It happened several times, like in the Q. case that a remark about a symptom would produce a reaction even in more reserved members and by association would bring out repressed material.

Parents who had more than one child were worried about the possibility of schizophrenia in their younger child. This anxiety was alleviated by discussion and comparison of the developmental steps in both siblings. In general, however, there was a tendency to neglect the younger child, due to the time-consuming preoccupation with, and the guilt feelings about, the schizophrenic child.

These guilt feelings were even further increased by the difficulties in communication with the child (verbal and non-verbal). Thus, cuing between mother and child was disturbed. The mothers would often say that the normal child was predictable and that they had no problem in understanding it, whereas the sick one was unpredictable. Mothers were confused by the cues of the sick child. It is well known that a mother reacts differently to each child and that no child is born into exactly the same environment, even in the same family. However, it is hard to imagine that parents could be "schizophrenogenic" to one child only. We therefore may suggest that the constitutional factor plays the most important role in the etiology of childhood schizophrenia.[3] In our cases, we see that the child's inability to respond to the mother's cues and her inability to comprehend its cues were so intense that an inborn disturbance in the child can be postulated (especially in the absence of gross pathology in the mother).

Early in guidance the question of placement was raised. At first all the parents wanted to keep their children home, but as time went on those who had more than one child were considering the possibility of institutional care. The possibility of placement was introduced by the mother of an overideational girl, who could talk and even attended school for a short time. It was precipitated by the fact that the children around the house and in school called the child "nut" and "bird brain". This distressed the child, and she started to regress more and more. She would defecate in her pants and scream at her own image in the

[3] Lauretta Bender (9) defined childhood schizophrenia as a "developmental lag of the biological processes from which subsequent behavior evolves by maturation at an embryological level, characterized by an embryonic plasticity, leading to anxiety and, secondarily, to neurotic defense mechanisms." She adds that "no child can develop schizophrenia unless predisposed by heredity; the psychosis is precipitated by a physiological crisis; the pattern of the psychosis and its defense mechanisms are determined by environmental and psychological factors."

A. P. Weil (19) remarks that "strong maternal inadequacy and/or rejection may contribute considerably to the faulty development, but it is very doubtful whether they could create it."

mirror. It was later discovered that what she actually hated was not her image in the mirror, but the mirror itself. She had seen the show "Snow White" and remembered that when the question was put to the mirror, "Mirror, mirror, on the wall who is the fairest of them all?", the mirror answered, "Snow White". The child became envious of Snow White's beauty and angry at the mirror. Her parents were criticized by those whose children were even more regressed. However, after several months three out of five parents were contemplating eventual placement (without encouragement from the leader). Distressed by the bizarre behavior of their growing children they were concerned about the influence which it might have on the younger and healthy siblings. Episodes like eating soap or paper as well as the persistence of transitional objects were common. Most of them had a towel, pillow or some piece of material to chew on and keep near their body. Although the transitional object is a common occurrence in younger children, the persistence of it at the age of 5–6 was considered a deviation by the parents (20).

An additional reason for contemplating placement was the children's progress. It sounds paradoxical, but progress in these children was at times more difficult to take than their regressed state. Q., for instance, at first would not eat any solid food, but as his condition improved, he started to chew. He would go to the refrigerator, take an apple and chew on it, finish half of it, and throw the rest at his mother. For a child who would not pay attention to anyone and seemed unaware of his mother's presence, it was excellent progress, but it is hard to blame the mother for showing little appreciation for such an improvement.

Other signs of improvement in the children were seen within a short time after the beginning of guidance. For instance, at first the more regressed ones would hit themselves when frustrated by outside or inner stimuli. If a ball was handed to them, they would not throw it in the direction of a person but at random. A few months after the guidance started, they would hit the parents and throw the ball at them. This seemed to indicate the beginning of object relationship.

Paradoxically sleep disturbance was another sign of improvement, indicating a developing interest in the outside world. It was a result of object cathexis, until now absent in these children. Sleep disturbance and object directed aggression were interpreted to the parents as a transitory stage indicating progress. They accepted this interpretation intellectually but not emotionally. Thus, contemplation of placement might be related to the difficulty in accepting disturbed behavior even if it is called by the therapist "improvement".

From time to time the parents complained about some unusual behavior of the children. For instance, S. refused to take off her shoes at night. Mrs. S. was so upset about it that she expressed a wish to die. The rest of the group came out with examples of habits far worse than Mrs. S.'s child exhibited, and Mrs. S. was criticized for such a defeatistic behavior. Mrs. S. was shown the positive traits and the progress she herself reported in her daughter. Only the week before she had mentioned that the little girl was an honor student in the CRMD class.

The problem of CRMD classes for schizophrenic children was discussed. Some parents questioned the wisdom of such an arrangement and resented the fact that there was no special provision for disturbed children who function temporarily on a lower level of intelligence. At first it seemed that there was a certain disadvantage in having in the group parents of children who could attend a CRMD class, together with some who were not ready even for this. It created sharp differences between the parents, the mothers being more sensitive about these differences than the fathers. But the problem was presented for discussion and partly ventilated during the sessions.

The discussion of placement (17) brought to focus the future development of the schizophrenic children, namely, what could be expected at the stormy period of adolescence. The therapist pointed out that puberty in schizophrenic children is often their best period, and many symptoms disappear at that time (18). In adolescence there is a spurt of maturation, and since childhood schizophrenia is primarily caused by a maturational lag, there is an improvement created by this spurt and schizophrenic symptoms are repressed (11).

Summary

1. A highly selective small group appears to be a good medium for guidance because homogeneity is helpful in keeping it together, while at the same time increasing its cohesiveness.

2. Guidance for the parents provided an opportunity for discussion of problems commonly shared by all. The guidance group was a source of relief for their troubles and a substitute for the relatives and friends from whom they felt estranged because of their children's pathology. It helped to alleviate in part the parental guilt about their role in the etiology of the children's illness.

3. Information about the existence of psychotic relatives was consciously withheld from the psychiatrist. This was due to the parents' strong tendency to avoid the acceptance of heredity.

4. The hereditary factor in the above cases was dominant. Although, in general, the environmental factors should not be minimized, in our cases their effect was limited due to the children's severe maturational lag. However, even in these children some improvement was noticed when the parents gained more insight. Progress observed a short time after the guidance began seemed to point to the indirect help for the children through parental guidance.

5. It was easier for the parents to maintain that their wrong attitude towards the children caused the schizophrenic process than to accept the hereditary etiology. Responsible for this attitude was the belief that if the etiology of the children's sickness was environmental, then it was curable. (This happened despite frequent explanations that the hereditary aspect does not necessarily make childhood schizophrenia hopeless.) An additional explanation for non-acceptance of hereditary etiology might be the fear that they themselves were predisposed to mental illness.

6. The severe symptoms of the children could be detected in a considerably milder form in their parents.

7. Paradoxically the improvement in the condition of the schizophrenic children posed even greater problems to the parents, for it was expressed in the form of an aggressive behavior. Thus, one of the consequences of improvement in the children was a contemplation of placement on the part of the parents.

8. Inadequate parent-child cuing, present in every case, was a source of great distress, tension and frustration in both parents and children.

9. Parents of the same child acted in a similar fashion in their respective groups. This seems to imply that the choice of marital partner was motivated by unconscious needs rather than being accidental.

10 Resistance to guidance was present despite good conscious motivation. It was expressed in: jokes, tangential conversation, practical questions, attempt to talk about the psychiatrist's problems.

11. Good object relationship in the parents in contrast with the poor object relationship in their children indicates the importance of the constitutional factor in the etiology of childhood schizophrenia.

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THE USE OF RESERPINE IN THE MANAGEMENT OF ACUTE MENTAL DISTURBANCE ON AN IN-PATIENT SERVICE: PRELIMINARY REPORT[1]

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Since the active principle, reserpine, of Rauwolfia serpentina was isolated in 1952, the research literature has grown very rapidly, based on many different sorts of field observations and often offering quite contradictory claims. Although more carefully controlled and documented studies are becoming available, these confusions have not yet been clarified. For example, Kirk and Bauer (3) using a double-blind research design, in which neither the patients nor the research observers knew whether reserpine or a placebo was being given, followed 60 inmates of Elwyn Training School who had emotional disturbances for a three-month treatment period. They studied changes in manageability, anxiety, and control as reported by teachers and ward personnel, and as reflected in psychological test scores. They found no appreciable improvement on any of these criteria from moderate dosages of reserpine. In fact, one young man developed an acute psychotic episode while on reserpine which did not yield even to tripling the dosage level.

On the other hand, Rinaldi, Rudy, and Himwich (5) reported a double-blind study on 40 predominantly schizophrenic patients of long-standing duration at Galesburg State Research Hospital in which reserpine showed itself superior to chlorpromazine and azacyclonol. In their study, each of the active drugs was used in comparison with an inert placebo during a four-week observation period. They evaluated the effectiveness of the medication against an over-all judgment of change in symptoms and reported that irritability, tension and hostility were attenuated.

Although the research methods used in such studies constitute crucial refinements in the study of these new drugs, even the double-blind technique poses certain difficulties in interpretation and evaluation. In such a design, it is still possible for some communication of attitudes of enthusiasm, on the one hand, or of negative feelings regarding somatotherapy, on the other, when an active drug is compared *only* with an inert placebo. If on a particular psychiatric unit some patients are placed on placebo and other patients on the active drug, the doctors and nurses may pick up cues sufficient to indicate an active drug rather than an inert placebo. The patient may also pick up some change in his internal milieu which he communicates to his attendants. Through suggestion, a relatively non-specific effect can be amplified by the expectant attitudes and feelings of those in the therapeutic team. It enhances the efficacy of the design if a drug like reserpine is compared simultaneously with an *active* placebo that simulates some of the sedative reserpine effect (1, 6).

PURPOSE OF THE STUDY

This study is part of a project designed to evaluate the role of the tranquilizing drugs in the therapeutic program for acutely ill psychiatric in-patients. The patients in this group were all hospitalized voluntarily for intensive short-term treatment in a university teaching hospital which charges moderately high inclusive rates. All patients get close nursing attention, emergency supportive individual psychotherapy, and somatotherapy as needed. The patients in this study were assigned to the drug project if they showed a need for day-time sedation because of sufficient tension, anxiety or emotional disturbance to cause severe personal discomfort or difficulties in ward management.

In evaluating the clinical efficacy of a drug,

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All medications were prepared through the kind auspices of the Ciba Company.

the social and interpersonal context in which the therapy is conducted has great importance, as well as the specific pharmacological actions of the drug and the psychodynamic meaning to the patient of receiving the drug. In our study, we have attempted to retain the usual environmental factors operating in a situation in which a patient's need of a sedative arises. We have also retained other modes of treatment, somatic or psychotherapeutic, as these are deemed necessary. In other words, reserpine (Serpasil) was introduced into a therapeutic setting which was not artificially constricted because of the study and was compared to both an active drug, powdered opium (PO), and an inert placebo.

It should be mentioned, however, that when a patient was placed in our study group, in some instances certain of the personnel felt that the patient's therapeutic opportunities were being unfairly limited. The probable effects on patients of such attitudes on the part of the personnel cannot be isolated, but they were probably quite evenly distributed among the three groups receiving the medications. The most important result was the loss of cases for the present analysis through failure to assign a case to the drug project or through premature removal of a case from the project to initiate different therapeutic regimes.

Procedure

The choice of comparisons forced us to use oral administration of the drugs by capsules. Our pharmacy department distributed the materials and kept the record of medication. The cases were assigned to the three treatment conditions randomly, merely as they were enrolled in the project. The dosages were: for the first two days, two capsules of the preparation four times a day; one capsule four times each day thereafter. The concentrations of the drugs were chosen to provide a moderate dosage approximately equivalent in sedative action. The reserpine patients received 8 mg. of Serpasil for the first two days, then 4 mg.; for the PO, initially 0.12 grams, then 0.06 grams a day thereafter. The placebo capsules contained lactose.

Our dependent variables were selected in order to reflect the possible effects of reserpine either in the improvement of ward management of confused or disturbed patients or in the alleviation of the tensions of anxious and distraught patients. Other considerations have entered, however, in our research design. The study was carried out on wards where other work was also in progress. The behavior of the patients under study had to be maintained within reasonable limits. To make the project acceptable to busy, over-worked nurses and residents we set up an escape clause so that a given patient could be taken off the project before he otherwise would be if he became extremely unmanageable. These cases were declared failures; the frequency of these failures is one of our dependent variables. So far in 51 cases, there have been 9 cases who could not be given oral medication and 8 failures: 3 with powdered opium, 3 with reserpine and 2 with the placebo (see table 1).

Otherwise, a patient was continued on medication until either sufficient change occurred in his behavior or his anxiety level so that medication no longer was considered necessary, or until several days prior to the date of expected discharge from the hospital. Experimental medication was not continued after the patients were discharged.

To control for attitudinal variations, the set of observations was made in a "naturalistic" setting. The staff decided to use these three medications in the way that reserpine would ordinarily be employed to handle acute upsets. No other day-time sedatives were used, but if night-time medication was required, it was

TABLE 1.—Reasons for Cases Lost from the Project, Summary of Failures, Concurrent EST, and Numbers Available for Analysis

Treatment Group	Original Cases	Reason for Lack of Follow-ups			Cases Available for Analysis			Total No. Failures	No. Given EST
		Refused med.	Discharged	Failure	Nursing CL	Resident CL	Pur. Peg.		
Reserpine	16	3	—	—	13	9	9	3	3
PO	17	3	2	—	12	11	9	3	3
Placebo	18	3	—	1	14	11	9	2	5

prescribed. If EST would ordinarily be used, it was prescribed. The usual psychotherapeutic procedures were also used. This arrangement placed heavy reliance upon the placebo control and the ultimate cancellation of these other independent variables through randomization. No systematic differences in use of night-time sedatives have been noted between the treatment groups. Of the 11 cases getting EST during the study, 5 were on placebo while 3 each were getting reserpine and PO.

Three sources of data for study were used. One was the nurses' observations. On each shift they filled out a rather detailed Checklist of Behavioral Observations containing 56 items which they could indicate as absent, present or present in extreme (see Appendix A). Since each shift filled out one of these, three of them were available each day for each patient. The nurses also kept routine blood pressure readings on the patients, and these, for our purposes, were kept separate. One of the staff, not involved in the evaluations on the project, reviewed these each day as a safety precaution. No patient showed sufficient difficulties on this measure to warrant any intervention by the outside observer.

The physician responsible for the case formulated a diagnostic synopsis initially. He filled out a mental status examination involving digit span, serial subtraction and memory for name and address. In the course of his initial interview with the patient, he made observations and filled out a Checklist of Overt Anxiety Signs (see Appendix B, part 1). By way of summary of this checklist he also made a graphic rating of degree of anxiety or upset. This involved making a check mark along a line on which various points were described as they apply to anxiety level (see Appendix B, part 2). This form was adapted from material prepared by Dr. Carl Lauterbach (4).

Part of the psychological evaluation involved the Purdue Pegboard, which is a timed task in which the individual has to place pegs or assemble materials in holes on a pegboard as rapidly as possible. This task was employed because King's (2) work on anxiety and psychomotor performance suggested that a patient's performance would reflect his changes in anxiety. A sorting of the Minnesota Multiphasic Personality Inventory was also attempted on this occasion; we had particular interest in the anxiety and repression scales in this instrument (7).

Before medication was begun, all of these observations were made and recorded. The nursing notes and observations were continuously recorded as medication continued.

After the first week of medication the psychological studies were repeated; the physician filled out the checklist and anxiety rating and completed the mental status examination. At the end of the therapy when the patient was about to be discharged, all these studies were repeated. As indicated in table 1, an insufficient number of patients has stayed on the project long enough for a full evaluation of these drugs. They spent a median number of 11 days under medication. Our analysis here will be restricted to effects noted in the first week of medication.

Through the loss of cases summarized in table 1, only 12 cases that had the PO treatment were available for analysis. One case from the reserpine and two from the placebo group were picked at random and excluded from the analysis. The composition of these groups in sex and diagnosis is summarized in table 2. The PO group contains a disproportionate number of females, but the number of neurotic and psychotic conditions is rather uniformly distributed over the treatment groups.

TABLE 2.—Summary of Background Information on the Thirty-six Cases Available for Follow-up

Treatment Group	Sex		Neurotic Reactions				Psychotic Reactions			Brain Syndromes	
	M	F	Anxiety	Convers.	Ob.-Comp.	Adjust. Prob.	Depress.	Manic	Schizo.	Acute	Chronic
Reserpine	5	7	3	1	—	—	3	—	3	1	1
PO	2	10	1	1	—	2	3	1	4	—	—
Placebo	6	6	1	1	1	—	5	—	3	—	1

Nursing Observations

One of the most complete sets of information was provided by the nursing checklist. This material was quantified by totalling up the number of symptoms or observations indicated as present by the nurse. Whenever a particular symptom was marked extreme, two check marks were made and these counted twice on this rough scale. This measure serves as an index of psychiatric disturbance.

The values of this score were plotted for individual cases, and these graphs showed quite a bit of change over a day's time. Most patients settled down very well at night and only showed disturbance, if they were going to, in the day-time. To minimize these fluctuations the summary scores from this material were summed over the first three days and over a similar three-day period after seven days of medication. This composite is quite arbitrary and cannot be readily referred to any particular familiar record. The means of these composite scores for each group are shown in table 3. The standard deviations and the analysis of variance of these data are also provided. Each group has 12 cases, involving observations on 36 patients altogether. Figure 1 shows the mean values that each group had initially as well as the changes noted after seven days of medication.

It can be seen that the three groups initially fall at slightly different values on this scale. The analysis of variance indicated that these differences in initial levelling were not statistically significant. All three groups changed by the end of the first week, and this change is highly significant (p beyond 0.1% level). Since there is no significant interaction, there is no special effect in this set of measures attributable to one medication or another. A separate analysis on the cases that did not have concurrent EST showed the same changes in the composite score. These changes cannot be attributed merely to the EST treatment. On that basis, then, it must be assumed the placebo treatment does just as well as either of the drugs in reducing the level of disturbance as seen by the ward nurses.

TABLE 3.—Patient Behavior Measured by the Psychiatric Nurse's Checklist of Behavioral Observations: Means, Standard Deviations, and Analysis of Variance of the Initial Levels and Values after Seven Days of Medication
(Twelve cases in each group)

Period of Observation		Treatment		
		Reserpine	PO	Placebo
Initial	Mean	58.98	62.97	60.14
	S. D.	34.20	53.46	37.13
First week	Mean	32.90	37.73	42.57
	S. D.	24.22	31.18	31.68

Analysis of Variance

Source	df	Variances	F Ratio	Significance
Between groups	35			
Treatment	2	199.50	<1.00	—
Error (b)	33	1,711.30		
Within groups	36			
Time	1	9,499.00	20.00	0.1%
Treat × time	2	131.50	<1.00	—
Error (w)	33	475.00		
Total	71			

Resident's Report on Anxiety

Table 4 shows a similar tabulation of the data from the resident's Checklist of Overt Anxiety Signs. The means before and after the administration of the drugs are shown graph-

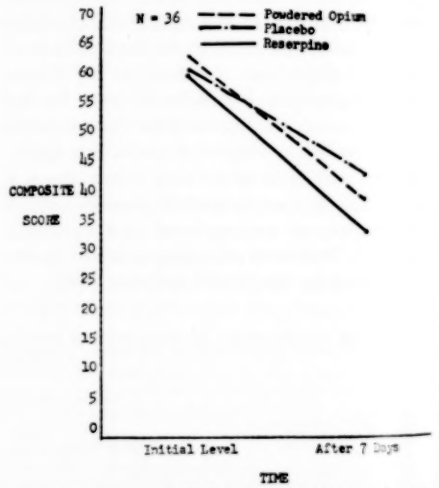

Fig. 1. Average initial levels and changes in composite score on the psychiatric nurse's Checklist of Behavioral Observations for each of the treatment groups.

TABLE 4.—PATIENT BEHAVIOR MEASURED BY THE RESIDENT'S CHECKLIST OF OVERT ANXIETY SIGNS: MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE OF THE INITIAL LEVELS AND VALUES AFTER SEVEN DAYS OF MEDICATION
(Nine cases in each group)

Period of Observation		Treatment		
		Reserpine	PO	Placebo
Initial	Mean	6.33	6.78	5.22
	S. D.	4.93	4.11	3.55
First week	Mean	3.89	4.56	3.22
	S. D.	3.24	3.44	2.29

Analysis of Variance

Source	df	Variances	F Ratios	Significance
Between groups	26			
Treatment	2	9.56	<1.00	—
Error (b)	24	15.09		
Within groups	27			
Time	1	66.66	12.32	0.5%
Treat × time	2	0.23	<1.00	—
Error (w)	24	5.41		
Total	53			

TABLE 5.—PATIENT BEHAVIOR MEASURED BY THE RESIDENT'S GRAPHIC RATING OF OVERT ANXIETY: MEANS, STANDARD DEVIATIONS, AND ANALYSIS OF VARIANCE OF THE INITIAL LEVELS AND VALUES AFTER SEVEN DAYS OF MEDICATION
(Nine cases in each group)

Period of Observation		Treatment		
		Reserpine	PO	Placebo
Initial	Mean	44.88	37.55	37.44
	S. D.	18.28	15.71	20.72
First week	Mean	40.11	37.77	38.11
	S. D.	18.27	15.76	17.79

Analysis of Variance

Source	df	Variances	F Ratios	Significance
Between groups	26			
Treatment	2	137.02	<1.00	—
Error (b)	24	200.88		
Within groups	27			
Time	1	22.69	<1.00	—
Treat × time	2	41.13	1.06	ns
Error (w)	24	38.98		
Total	53			

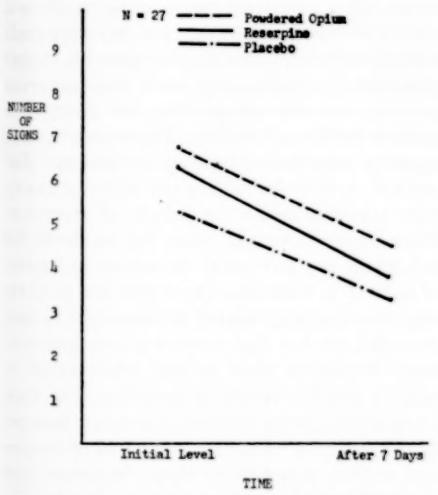

FIG. 2. Average initial levels and changes reported on the resident's Checklist of Overt Anxiety Signs for each of the treatment groups.

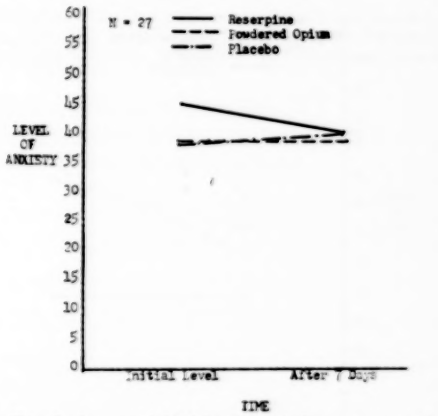

FIG. 3. Average initial levels and changes reported on the resident's Graphic Rating of Overt Anxiety for each of the treatment groups.

ically in figure 2. Note here there are only 27 cases involved.

The only statistically significant changes are those over time for all groups. On the resident's rating of anxiety, tabulated in table 5 and plotted graphically in figure 3, not even time changes were significant.

PSYCHOLOGICAL TEST DATA

Table 6 shows the performance of each of the treatment groups on the assembly task of

TABLE 6.—Patient Behavior Measured by the Purdue Pegboard Assembly Task (Third Trial): Means, Standard Deviations, and Analysis of Variance of the Initial Performances and Levels after Seven Days of Medication
(Nine cases in each group)

Period of Observation		Treatment		
		Reserpine	PO	Placebo
Initial	Mean	23.67	26.33	28.22
	S. D.	9.26	5.76	7.72
First week	Mean	24.11	33.00	31.89
	S. D.	5.72	7.17	8.12

Analysis of Variance

Source	df	Variances	F Ratios	Significance
Between groups	26			
Treatment	2	214.50	1.95	$20 < p > 10\%$
Error (b)	24	110.00		
Within groups	27			
Time	1	174.00	12.99	0.5%
Treat × time	2	44.00	3.28	5%
Error (w)	24	13.40		
Total	53			

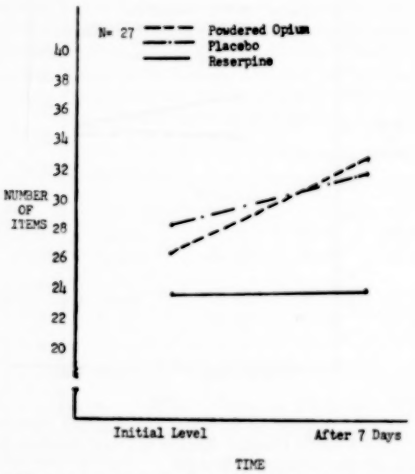

Fig. 4. Average initial scores and changes on the Purdue Pegboard Assembly Task (Third Trial) for each of the treatment groups.

the Purdue Pegboard. The analysis of variance indicated that the members of the PO and placebo groups improved to a statistically stable degree on retesting after a week of treatment, but that the group treated with reserpine failed to show this increment. This interaction between medication and practice is shown graphically in figure 4.

The number of cases on which valid MMPI sortings were obtained both before and after medication does not warrant special reporting. No evidence is available that the cases that could be tested prior to treatment showed any shift in anxiety or repression as reflected in these scales.

Discussion

These preliminary results on a small group of acutely upset psychiatric in-patients, although they are based upon careful observation and reported in as objective terms as possible, do not support very extensive generalization. Nevertheless, our findings seem to be rather sobering in contrast to the important, and often extravagant, claims for reserpine made in early publications. Within the period of observation our patients improved appreciably in many ways. The group given reserpine did not show appreciable reduction, however, in the occurrences of failures on the project, either when compared to those being given a standard sedative drug or even in comparison with those being given an inert placebo. Reserpine did not reduce the need for nocturnal sedation or the advisability of giving the patient EST concurrently. The nurses did not report a significant decrease in personal discomfort or in undesirable ward behavior in any way attributable to the action of reserpine. For a smaller group of cases, the residents did not detect any particular decrement in tension or anxiety in their interviews with the patients that was specially related to reserpine. In fact they did not feel that there was any improvement in any of their groups when asked to make a graphic rating of disturbance of their cases, although the number of separate features of the patients' behavior indicative of tension and anxiety reported by them decreased over the week's time.

If King's (2) contentions are valid, a rise in performance on the pegboard should be expected as the patients' level of anxiety subsides. The changes in the PO and placebo groups are in the expected direction, but since practice effects would also be expected

to lead to some degree of improvement, the changes cannot be entirely ascribed to lack of interfering anxiety. The lack of improvement in the group treated with reserpine is particularly puzzling, therefore, since this group had improved generally as much as either of the other groups in over-all disturbance. Elaborate hypothesizing about this effect should be postponed awaiting further substantiation and independent confirmation.

It must be concluded from these findings that in this treatment center acutely upset psychiatric in-patients do not receive any special benefit from moderate dosages of reserpine over and above the effect from pharmacologically inert material which the patient receives with the expectation of improvement. While there may be some definite effects of reserpine or powdered opium at these dosage levels, their range of action is far smaller than the effect of being given any medication in this hospital setting.

Summary

Thirty-six acutely upset psychiatric in-patients, randomly assigned to one of three treatment groups for day-time sedation of their high anxiety and tension or their difficulties in ward management, were studied over a week's time. The effects of moderate dosages of reserpine, powdered opium and an inert placebo were studied by means of carefully recorded nursing observations, anxiety ratings and psychological test performance. No systematic difference ascribable to reserpine could be found except a lack of improvement on the pegboard task comparable to the changes in the opium and placebo groups. A tentative conclusion was made that reserpine offers little in the way of amelioration of acute psychiatric upset within this hospital setting over and above the psychological effects from the milieu and the treatment regime.

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Appendix A

A Checklist of Behavioral Observations by Psychiatric Nurses

Project No._____ Patient _____

Date _____ Hours_____

Observer _____

Complete this form on each patient in the study for each shift. Place a (+) opposite each item characteristic of the patient during the period of observation. Place a (++) opposite each item which is present in extreme degree. Note in the routine nursing notes in the chart specific instances of the behavior checked in this list.

BEHAVIOR AND MANNERISMS:

_____ posturing
_____ bodily rigidity
_____ perspiring excessively
_____ talkative and voluble
_____ grimacing
_____ incoherent in conversation
_____ hallucinations
_____ talking to himself
_____ bewildered and perplexed
_____ restless and fidgeting
_____ tremors
_____ mute
_____ circumstantial in conversation
_____ tics
_____ masturbating
_____ untidy
_____ picking and rubbing body parts
_____ incontinent

MOOD:

_____ apathetic
_____ sulking
_____ euphoric
_____ irritable
_____ depressed
_____ anxious
_____ calm
_____ brooding
_____ cheerful

CONTROL:

_____ performs many irrational acts
_____ loud and noisy
_____ swearing and cursing
_____ destructive
_____ assaultive or combative
_____ impulsive

MENTAL CONTENT:

_____ feelings of guilt
_____ feelings of unworthiness
_____ feelings of influence
_____ apprehensive
_____ fear of loss of control
_____ physical complaints
_____ talking of suicide
_____ disoriented

RELATIONS WITH STAFF:

_____ resentful of staff requests
_____ tube feeding required
_____ poor self care
_____ suspicious and distrusting
_____ negativistic and resistant
_____ demanding
_____ complains about ward and routine
_____ overly submissive to suggestions

RELATIONS WITH PATIENTS:

_____ socially incommunicative
_____ usually alone
_____ usually in company of others
_____ bullying others
_____ dominating
_____ seeks contacts freely
_____ insecure

Pertinent comments (e.g., starting EST, 7th day of medication, etc.)

Appendix B

Rating Scale of Anxiety

Patient _____ Rater _____

Total time patient observed _____ Date _____

Instructions

Mark (0) for absence of the sign.
Check (+) for presence of the sign.
Check (++) if sign is present and is severe.

1. Checklist of Overt Anxiety Signs.
   a. RESTLESSNESS (e.g., shifting in chair, fidgety) _____
   b. IRRITABILITY (e.g., hostile reaction to frustration) _____
   c. SPEECH DISTURBANCE (e.g., halting, blocking, pressure of speech, excited speech) _____
   d. TREMORS (e.g., shaking of hand or facial muscles) _____
   e. COLD SWEATING HANDS OR FOREHEAD PERSPIRATION _____
   f. STARTLE REACTION (e.g., sudden motor reaction to incidental or abrupt stimuli) _____
   g. HAND AND FINGER MANIPULATIONS (e.g., of objects, wringing of hands) _____
   h. IMPAIRED CONCENTRATION OR ATTENTION (e.g., failure to comprehend simple statements, asks interviewer to repeat statements, preoccupied) _____
   i. MOTOR AWKWARDNESS (e.g., fumbling of objects, bumps into objects) _____
   j. HYPERSENSITIVENESS (e.g., overreaction to slight stimulation, to slight verbal criticism) _____
   k. OTHER _____ _____
      _____ _____
      _____ _____

2. Graphic Rating of Overt Anxiety.

−3 (0)	−2 (10)	−1 (20)	0 (30)	+1 (40)	+2 (50)	+3 (60)
(Extreme lack of concern apathy)			(Normal adult individual in *this* situation)			(Overt panic state)

AGRANULOCYTOSIS ASSOCIATED WITH CHLORPROMAZINE THERAPY

BASIL E. ROEBUCK, M.B., B.S., D.P.M.[1]

The introduction of chlorpromazine for treating mental disorders has encouraged its increased usage both in hospitals and in private practice. Though most cases do not develop serious complications, a variety of side effects has been reported including jaundice, tachycardia, nausea and epigastric distress, febrile responses, and non-specific changes in the leukocyte count (3). Most of these reactions clear when the drug is discontinued. Several reports have implicated chlorpromazine as causative agent in agranulocytosis.

Forman and Ide (4) described a fatal outcome in a 73-year-old white woman, and five other cases have been reported in the British and American literature. All these involved women, five over 61 years of age. At about the same time Goldman (5) reported three non-fatal cases, all women. Rotstein, Frick and Schiele (9) later described a non-fatal case, again in a female patient, and mentioned a second non-fatal case. Kasak, Schaefer and Winter (7), in reviewing one year's experience with the drug, mentioned five non-fatal instances of agranulocytosis in a series of 800 cases. Hodges and LaZerte (6), Boleman (1) and Prokopowycz (8) have all described fatal cases in women over 61.

Reviewing these findings, one is impressed by the absence of agranulocytosis in males and also by the markedly increased incidence in patients over 60 years of age. Carey and Magraw (2) recently reported the case of a 51-year-old male who had recovered from the illness.

The case described here is of interest in that it occurred in a 48-year-old male who had been under observation as an in-patient at the Eastern State Hospital for 24 years. The outcome was fatal, and an autopsy was performed.

Case Report

Clinical course. The patient, a 48-year-old, white schizophrenic male, was first admitted to Eastern State Hospital, Williamsburg, Virginia, on February 24, 1931. From his hospitalization until his death on September 14, 1955, his illness showed no evidence of resolution. There were occasionally slight remissions of his mental symptoms when he was well enough to be sent home on trial visits (1931, 1932, 1934 and 1945). But each time he failed to sustain his improvement or to adjust successfully in the community for any appreciable time. In addition he occasionally attempted escape from the hospital. In contrast to his progressive mental deterioration, his physical condition was always good. Records do not mention the use of insulin or electroconvulsive therapy, presumably because by the time these treatments had come into general usage, he was considered too advanced to show lasting benefit.

On June 26, 1955, chlorpromazine was prescribed to make him more amenable to ward care, but nothing approaching a complete remission of his symptoms was expected, because of their chronicity. Initial dosage of 100 mg. t.i.d. was continued until August 24, 1955, when it was increased to 200 mg. t.i.d. On September 12, 1955, the dosage was again increased to 300 mg. t.i.d. In response to this medication, the patient, formerly irritable and combative, became calm, sociable and easy to manage.

On September 11, 1955, the ward physician noted that this patient had developed a cellulitis of the nose, with acute submandibular lymphadenopathy. His temperature was 102°F. Immediate treatment consisted of procaine penicillin, 600,000 units twice daily, with local treatment of the nasal lesion. The temperature remained at 102°, and the local lesion did not change in appearance.

On September 14, 1955, auscultation revealed scattered rales over the lung fields, 103° temperature, pulse 144, respiratory rate 24 per minute. The chest signs were most prominent over the lower part of the left upper lobe, and there was dullness to percussion in

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that area. There was slight neck rigidity, and the patient had difficulty sleeping, in spite of his lethargic appearance. Diagnosis at this time was: 1) Cellulitis of the nose with acute submandibular lymphadenopathy; 2) pneumonia, mainly involving the left upper lobe; 3) possible meningeal involvement.

The patient was transferred to the hospital infirmary where laboratory tests revealed a severe agranulocytosis: hemoglobin 77%, 12.0 gm.; r.b.c. 3,550,000; w.b.c. 1,200; sedimentation rate—5 minutes—1 mm., 10 minutes—11 mm., 15 minutes—19 mm., 30 minutes—26 mm., 60 minutes—27 mm. Examination of the cerebrospinal fluid revealed a protein of 13.22 mg.%; sugar 86 mg.%; scattered red blood cells but no white cells. Treatment was unsuccessful, and the patient expired on the fourth day of his acute illness.

Gross autopsy findings (September 15, 1955). Acute brain edema; hepatization of both lower lobes of the lung and congestion of the right and left upper lobes; toxic changes of the kidney, liver and spleen; agranulocytosis.

Examination of the brain. Gross neuropathological examination of the brain showed that, after about three months of fixation, the weight was 1701.5 grams. There were no arteriosclerotic changes in the basal vessels and no discoloration of the dura mater. The pia was removed easily, leaving no substantial defects. The convolutions of the right hemisphere appeared to be flattened, especially over the frontal and parietal areas. Horizontal sections revealed no gross lesion. The ventricular system was narrowed at its medial and posterior levels. The brain substance was somewhat anemic, and there were minute reddish areas throughout the white matter of both hemispheres. The preliminary impression was that of an edematous brain with no other lesion to explain the increased weight and flattened convolutions. Microscopic examination was made of areas 10, 11, 4, 24, 39, 40, CA, 17. In all these areas as well as in the spinal cord and cerebellar cortex distension of the perivascular spaces was very conspicuous. There was also present a distension of the pericellular spaces though this was less marked and less frequent. In some areas the white matter had a sieve-like appearance due to the presence of a great number of vacuoles, side by side. There were no demyelination, no cytoarchitectural disorder, no change in the cellular structure and no cellular gliosis. In brief the diagnosis of cerebral edema made on the ground of gross study of the brain and increase in brain weight was confirmed by histological examination.

Other microscopic findings. A *lung section* showed a massive intra-alveolar hemorrhage with complete absence of white cells. Septa were poorly preserved and were extensively infiltrated with black pigment

The *bone marrow* showed almost complete absence of myelocytic cells. Eosinophilic types of cells were seen occasionally. The lymphocytic and erythrocytic series were well represented, and a moderate number of megakaryocytes and a small number of stem cells were present.

Autopsy findings were compatible with a generalized neutropenia.

Discussion

This is a fatal case of agranulocytosis in a 48-year-old white male schizophrenic patient who was treated with chlorpromazine. Laboratory and autopsy findings showed conclusively that agranulocytosis was the cause of death. Since the patient had been under continuous medical care for 24 years and had not shown previous evidence of any hemopoietic disorder, the only conclusion is that the causative agent was chlorpromazine.

Such agranulocytosis is not now a frequent occurrence. But since the drug is coming into increasing usage, and high dosages are frequently given, every precaution should be taken against the development of this condition. Measures to detect it, with facilities for prompt treatment, must be available. This poses a problem for many mental hospitals that have not maintained laboratories equipped to do routine hematological examinations on a large scale. Nevertheless, every attempt should be made to give patients on chlorpromazine regular hematological examinations.

Great responsibility rests upon the nurses, attendants and ward physicians to be alert to signs of the disease. Such simple measures as recording temperatures regularly and frequent physical examinations are valuable. It is most

important to give prompt laboratory investigation to any patient who develops a pyrexial illness or signs of focal infection while receiving the drug.

Chlorpromazine must be used with discrimination. The greater vulnerability of female patients and of the pre-senile and senile age groups should be considered along with the undeniable, though yet statistically insignificant, danger implied in the medication.

Summary

The literature on agranulocytosis associated with chlorpromazine therapy is briefly reviewed, and a fatal case in a 48-year-old male is presented. We have considered measures for the early detection of toxic changes and prevention of fatalities.

I wish to thank Dr. Granville L. Jones, Superintendent of the Eastern State Hospital, for his helpful criticism and advice; Dr. Walther Riese, Consulting Neuropathologist to the Department of Mental Hygiene and Hospitals of the Commonwealth of Virginia, for his advice, performance of the neuropathological examination and presentation of the neuropathological report; Dr. Jack Freund of the Department of Internal Medicine of the Medical College of Virginia for his suggestions; Mr. John M. Rhodes, Director of Laboratories, Eastern State Hospital, for his assistance in providing the data from the laboratory investigations.

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PSYCHOLOGICAL IMPAIRMENT IN WILSON'S DISEASE

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Wilson's disease is a recessively inherited condition characterized by destruction of the basal ganglia of the brain and cirrhosis of the liver. Although lesions in the cerebral cortex have been recognized for many years, they have received relatively little emphasis (5, 9). During the past decade the disease has become recognized as a disorder of copper and amino acid metabolism in which a deficiency of serum ceruloplasmin, a low serum copper and an increased urinary excretion of copper occur (2, 3, 11). The copper content of the tissues is increased, particularly in the liver, kidney and brain (4, 13). Although in the brain the greatest concentration of copper is found in the lenticular region, a substantial increase in the copper content of the cerebral cortex is commonly found (13). Psychological tests designed to evaluate the functional integrity of the cerebral cortex might be expected to show certain abnormalities.

During the last year, a patient with Wilson's disease, under study at the Rockefeller Institute, was hospitalized in the Payne Whitney Psychiatric Clinic where psychological examination using special test instruments was carried out. Satisfactory examination was possible with only part of the test battery due to the marked tremors and dysarthria which the patient exhibited. Sufficient alterations in psychological functions from those previously described (12) suggested that a study of additional cases might add more precise information on possible psychological impairment in this syndrome. Psychopathologic changes which are reported include hallucinations, excitements, altered perceptions and variable moods. The observed impairment of abstract thinking in the above patient was significant, but not extreme. The finding which led us to make psychological observations on other patients with the disease was the abnormal sensory perseveration as shown by a gross lowering of the flicker frequency threshold below the level for normals and psychopathologic patients.

PROCEDURE

Including the above patient, a total of seven individuals with Wilson's disease was examined. These patients were under study by one of us (A. G. B.) at the Rockefeller Institute and were brought to the psychology laboratory in the Payne Whitney Psychiatric Clinic for evaluation of psychological disturbances. Without exception, the patients were friendly, tractable, anxious to please, and without noticeable signs of disorganizing emotion.

The eight tests were from a specially developed battery currently used to study disorganization of thinking in psychiatric patients and psychological impairment in patients with cerebral histopathologic changes or dysfunctions related to neurophysiological factors. Because of the variable extent of clinical impairment in the seven patients, examining was limited to test procedures which could be reasonably applied in the individual case.

The following tests[3] were employed:

Wide Range Vocabulary (1). This is a multiple choice test of 100 items which covers a vocabulary achievement range from the third grade through the college level. The test is used in this study as an estimate of highest past achievement level. Experience has shown that vocabulary tends to remain relatively unaffected when other psychological functions show impairment, thus providing a base from which deterioration can be estimated. Scores are mental ages derived from the number of items correct. These are then converted to equivalent IQ's using Stanford-Binet tables.

Progressive Matrices (10). The Matrices is a non-language test of efficiency of present ability to discriminate and to think conceptually. It measures the ability to educe relationships in new and unfamiliar situations

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[2] Credit is due Miss Barbara Flood for technical assistance in the conduct of this experiment.

[3] A more detailed description of these tests is to be given elsewhere.

and make use of these insights in solution of problems. Observed scores are converted to equivalent IQ's.

Flicker Fusion Test Set.[4] This device is designed for the threshold measurement of the rate of intermittence of a pulsing light source at the point where the light patch no longer appears steadily illuminated but appears to flicker when the frequency is decreased. The frequency, light duration, and frequency change rate are electronically controlled. The light source is a white cold-cathode lamp. The light pulse duration is constant at 980 microseconds and is shown as a circular test patch subtending 2 degrees of visual angle. The visual intensity of the patch is 17 millilamberts at 60 pulses per second and is seen in the center of a black surround illuminated by about 4 foot candles of incandescent light.

Practice in reporting the first appearance of flicker was given until consistent readings were obtained, after which 20 trials were given. The mean value for these 20 trials is taken as the flicker threshold (CFF).

After-Image Duration. The apparatus is arranged so that a wide field, white adapting light of 154 footlamberts is viewed for 30 seconds. The patient is then required to indicate as quickly as possible the direction of the opening in a white Landolt Ring illuminated by a monochromatic red light flashing momentarily at one second intervals. The brightness of the red light is 0.017 footlamberts at the target. The score is the length of time in seconds to see the target correctly. If the target is not seen in 180 seconds, it is generally not seen at all. The test may also be considered to be the measurement of one point on the dark adaptation curve under these special conditions.

Pursuit Test.[5] The standard rotary pursuit test is used as a measure of learning and of variability in a task involving visually controlled motor coordination. The patient attempts to keep a stylus in contact with a metal disk embedded in the turntable while the table turns at 30 revolutions per second. The time on target is recorded electrically by means of an accumulating synchronous timer with practically instantaneous start and stop. Twenty trials of 15 seconds are interspersed with 15-second rest periods. The score is the mean time on target out of 15 seconds.

Series Choice Reaction Time. A specially arranged sloping board of three lights and three buttons is provided for the patient. When the initial light in a series is presented, pressing the corresponding button extinguishes the light and, simultaneously, lights one of the other two. The sequence of responding to one of two lights activated by the preceding response continues for 20 trials. Lights are presented in several random sequences by a relay system, and response times are recorded individually using three channels of an Esterline-Angus Operation Recorder fitted with external rapid feed. The reaction time is the mean of 60 responses measured on the recording chart.

Persistence. This measurement is the length of time in minutes in which an individual will persist in the increasingly unpleasant task of holding a button down against a strong spring. The apparatus is held in the hand, and the button is depressed with the thumb of the same hand.

Span of Apprehension. A previous test (6) has been modified so that (I) a series of stimulus dot patterns of random arrangement are recorded as single frames on motion picture film with appropriate "ready" signals. There are 12 seconds between stimuli, and the "ready" appears two seconds before the stimulus dot pattern which is exposed for $\frac{1}{30}$ of a second. A second sequence (II) is like the first except that horizontal and vertical grid lines are shown along with the dot patterns. The patient's responses as to the number of dots seen are plotted against the actual number of stimulus dots. Qualitative evaluation is then made from the scattergram.

Results

The test data are shown in table 1 with the patients arranged from left to right in approximate order of duration of illness. Patients F and G were uniovular twins with impairment of psychological functions to the point of being

[4] This apparatus is an adaptation by Mr. Robert S. Melsheimer of an original circuit designed for Dr. Carney Landis of New York State Psychiatric Institute by Mr. Melsheimer, then with the Bell Laboratories. The apparatus was built by Blendinger Instruments, Washington, D. C.

[5] Manufactured by Ralph Gerbrands, Arlington, Massachusetts.

TABLE 1.—Summary of Results on Seven Patients with Wilson's Disease

Personal Data		Patients						
		A	B	C	D	E	F	G
Age*		40	27	34	36	54	37	37
Sex		M	M	M	F	M	F	F
Age of onset		37	23	30	29	32	13	13
Duration of illness (yr.)*		3½	4	4	7½	22	23	23
Test Proceedure	**Normal Range§**							
Vocabulary IQ	—	127	128	107	127	137	‡	‡
Matrices IQ	—	109	113	88	115	103	76	70
CFF (cycles/sec.)	53.0–35.0	26.4	34.2	32.9†	27.8	28.5	28.7	27.3
After-image (sec.)	10.0–25.0	—	29.5	180.0	50.0	180.0	—	—
Pursuit (sec.)	5.0–14.0	—	0.57	0.25	0.95	1.23	—	—
Reaction time (sec.)	0.65–0.85	—	1.68	1.22	1.18	1.34	—	—
Persistence (min.)	1.0–11.0	3.6	0.77	1.87	2.03	6.85	—	—
Span I	—	Good	Good	Good	Over estimate	Over estimate	‡	‡
Span II	—	More variable	No change	Slight loss	No change	No change	‡	‡

* As of January, 1956.
† Calculated on the basis of changed test conditions.
‡ Invalid for attentional or other reasons.
§ Values given refer to data on 150 normal and psychiatric subjects (7).

unable to attend consistently to stimuli mechanically presented and who resorted to perseverative guessing on the vocabulary.

Four of five patients on whom valid vocabulary measures were obtained showed themselves to have reached at least superior levels of intellectual achievement in the past. The other patient was probably above average. In comparing these estimates of previous functioning with the Matrices test of present capacity for intellectual functioning, there are losses ranging from 12 to 34 IQ points. The Matrices score allows for effect of age. Two patients with only the Matrices score do not have a base from which an estimate of impairment can be made. School and work histories on these patients suggest that the initial potential was somewhat higher. At present, these patients perform at a borderline level with the extent of the deficit unknown. In the five patients with both scores, deterioration of ability to think conceptually is clearly evident.

The normal range of flicker thresholds for psychiatric patients and controls under test conditions of our laboratory is generally from 33 to 35 cycles per second. While two of the present patients approach the lower figure, these and the others are below this range. Each threshold represents the mean of 20 measurements of the appearance of flicker with a variability in the neighborhood of 1 cycle, the largest variability being a sigma of 1.8 cycles.

Similar results are shown for the duration of after-images. The four patients who could maintain their position in the apparatus showed a prolonged after-image duration (normal 10 to 25 seconds).

The pursuit test is used in the present instance as a measure of motor coordination and of learning. As would be expected from the motor symptoms in all patients, their performance was poor, with the best having an average of 1.23 seconds on target out of a possible perfect score of 15 seconds. In the course of 20 trials, no trend indicating learning was observed in any patient.

The series choice reaction time scores are all markedly prolonged, varying from 1.18 to 1.68 seconds. These scores are generally double the scores obtained in normals who show a range from 0.65 to 0.85 seconds. The scores obtained by the patients represent a marked loss in the speed of initiation of motor activity.

Measures of persistence in holding down a

button against moderate spring pressure are shown for five patients. The length of persistence time is apparently unrelated to the severity of clinical symptoms or other measured variables in this study. These scores are more probably related to individual personality characteristics.

An interesting negative finding involves the qualitative performance of five patients on the span of apprehension. Briefly presented dot patterns were perceived by these patients as accurately as normal subjects. A visual grid presented in the same field with the dots caused little or no disturbance to perceptual accuracy.

Discussion

The finding of impairment of intellectual functioning in each of the five individuals on whom there was a Vocabulary-Matrices differential, confirms the clinical findings in Wilson's disease. Such losses are seen in patients with disorganizing psychopathologic illnesses as well as in patients with widespread cerebral changes. In the present instance, well-habituated language function appears fairly well preserved with the loss occurring in the efficiency with which new relationships are abstracted or perceived and the ease with which these can be used conceptually. Discrimination functions or selective responsiveness for complex visual patterns appears, at the same time, to be relatively intact. It seems probable that the observed impairment results from changes in cortical functioning.

Previous experiments reviewed by Landis (8) as well as observations in this laboratory (7) make it clear that the flicker threshold is sensitive to cerebral damage. Typically, there is a significant lowering of the rate of flicker before the light source is no longer seen as a steadily illuminated field. The losses tend to be far greater than can be explained on the basis of physiological stresses of age and diurnal variations. In the present instance, the uniformly low thresholds are further evidence that the cerebral lesions in Wilson's disease are not restricted to changes in the lenticular nucleus.

The problem of retinal, cortical or other limiting factors on flicker thresholds cannot be evaluated completely. For present purposes, the assumption is made that lowered response frequency is a function of central integrative action that involves incoming sensory data as well as ongoing central activity.

Except in relatively few instances, our unpublished data show that a prolonged after-image time accompanies a lowered flicker threshold (7). The time increase repeatedly is observed in patients with changes in the structural integrity of the brain and generally is not found in normal subjects. The effect observed in patients with Wilson's disease is tentatively ascribed to some organic alteration in central visual function.

Even though motor symptoms in patients with Wilsons disease would interfere with good performances on sensori-motor tasks, they were used to assess the extent of loss and to observe the presence or absence of increased efficiency with successive trials. No change in performance was observed in the pursuit task after 20 trials. Random fluctuations of the stylus around the moving target due to tremors could have masked any learning effect, thus leaving the question of the possibility of motor learning unanswered.

The series choice reaction time scores appear to be measures of the speed of initiation of movement (inertia) in the sense that central effects of the previous response must have sufficiently cleared before the next response is possible. Normal subjects usually take twice the time to respond to this test situation as to the choice reaction test where the subject waits in readiness for one of two signals. The patients with Wilson's disease required twice the time of normal subjects to move the fingers from one button to another 11½ inches away. It is clear that motor impairment contributes measurably to these prolonged reaction times, but observation of the performance of these patients indicates a delay between intention, as shown occasionally by a mild start, and the initiation of a specific motor response. It appears that perseveration or general inertia of cerebral functioning also has contributed somewhat to these lengthened scores.

No correlation between the abnormal psychological findings and the disturbances in copper and amino acid metabolism was apparent in these patients. However, there was some relationship between the duration of the overt disease and the severity of the psycho-

logical impairment. Thus, the greatest abnormalities were detected in E and in the uniovular twins F and G who had suffered from the disease for the longest duration. Since copper is known to accumulate in the tissues in Wilson's disease, it seems possible that before gross disturbances in brain function can be detected, careful psychological testing may uncover minimal cerebral damage. In an attempt to reveal a cryptic neurological component it would seem particularly important to test those cases of Wilson's disease in which neurological disease appears clinically absent.

Summary

1. A study was undertaken to examine the nature and extent of the psychological impairment in 7 patients with Wilson's disease.

2. Evidence for loss in the capacity for conceptual thinking was found in all cases.

3. In addition, a lowered flicker frequency threshold and a prolonged after-image time suggested that lesions in the cerebral cortex were also present.

4. The accuracy of simple visual pattern perception and the size of the visual span of attention was similar to that found in normal subjects.

5. The possible value of psychological tests in revealing a cryptic neurological component in patients with Wilson's disease in whom a clinical neurological examination is negative is discussed.

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SYMPOSIUM ON ATROPINE TOXICITY THERAPY

History and Future Research

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At the present time, the somatic therapies seem to have a well-established place in the psychiatric armamentarium. Perhaps some day they will be replaced by more advanced and, hopefully, less empirical methods. The latest wave of enthusiasm for a cure-all in psychiatry is diminishing, and the tranquilizers are finding their proper place in the treatment of various psychiatric conditions. In spite of all advances made in the development of newer chemical agents in the treatment of psychotic reactions, there are numbers of individuals for whom one of the somatic therapies remains a treatment of choice. In this paper you will find the results of some of the studies carried out with a recently developed technique of somatic therapy. Atropine toxicity therapy consists of the production of multiple periods of atropine toxicity brought about through the intramuscular injection of large doses of the drug. The techinque itself is demonstratively safer, simpler, and at the same time, compares not unfavorably with insulin coma therapy in its therapeutic effects. In the manic phase of manic-depressive psychosis it is possibly superior to all currently used somatic therapies.

In 1949 the author, finding that a lack of adequate personnel precluded the possibility of establishing an insulin unit at the Ypsilanti State Hospital, began a small work of research with, at first, 15 patients. Increasingly large doses of atropine sulphate were administered, and these first patients received 20 to 60 mg. of atropine sulphate by intramuscular injection three times a week for from four to ten weeks. Literature, consisting of over seven hundred titles, having to do with innumerable studies on the properties of atropine, gave no information as to whether or not such a technique had ever before been employed. The literature emphasized the toxic properties of the drug, but at the same time the clinical reports of individuals accidentally poisoned suggested that tradition formed the basis for such an emphasis, rather than the observed response of patients to toxic amounts of atropine sulphate. The issue was confused because in so many cases of accidental toxicity all sorts of "treatment" were applied, and it could hardly be determined whether the treatment of the toxicity was of benefit or if the patient weathered the toxic state in spite of it. The author's own experience made the latter seem plausible and worthy of investigation. As a junior in medical school, he had seen a patient administered 10 cc. of 1 per cent atropine sulphate solution by a surgeon who infiltrated the skin surrounding a lesion, under the mistaken impression that he was injecting 10 cc. of 1 per cent procaine. The local anesthetic properties of the atropine permitted the excision to be performed without pain, and as the wound was closed, some 15 or 20 minutes after the atropine had been injected, the patient was found to be comatose; a condition which occurred unobserved because all eyes were upon the surgeon's immediate work at hand. The patient was immediately wheeled to the emergency room, once the mistake was discovered, and Dr. Honigman, a senior resident in medicine at the University of Maryland Medical School, took over his care. After hastily consulting a textbook and evaluating the status of the patient, he chose to "wait it out" and not use any antidotes unless the vital signs indicated the necessity for such measures. In five or six hours the patient "came to" and, after a period of confusion and ataxia, departed for his home none the worse for wear and, although I did not question him on the point, probably impressed by his recent experience. The memory of this event lay dormant for a number of years until a patient was observed in insulin coma. The clinical state of this latter patient recalled the mistaken injection of atropine years previously. Casting about for

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some way to establish an insulin service, the two previous experiences were recalled. The idea of using large doses of atropine instead of large doses of insulin seemed a "natural". A review of the literature seemed to confirm the safety of atropine sulphate as a drug, and, indeed, it appeared to be the drug of choice after other considerations were taken into account. Dr. O. R. Yoder, Medical Superintendent of the Ypsilanti State Hospital, is in my mind a remarkably courageous individual to have permitted a first-year resident to embark upon the systematic administration of heroic doses of a drug traditionally highly toxic and dangerous. After some preliminary studies to determine dosage and the toxic effects of atropine in large doses, 15 schizophrenic patients were administered high doses of atropine sulphate by intramuscular injection three times a weeek for a prolonged period of time.

By a stroke of fortune, several of the first patients, administered toxic amounts of atropine on multiple occasions, appeared markedly improved. Fortunate, because these patients had been purposely selected on the basis that they were poor prognostic risks. Many of them had been hospitalized for a long time and had not responded well to other forms of somatic therapy. This pilot study demonstrated the safety of massive doses of atropine and confirmed Goodman and Gilman's statement that "atropine is the safest of the potent alkaloids". The now demonstrated fact of the safety of massive doses of atropine was of some value in itself, but the therapeutic effects on mental illness were far from remarkable and, indeed, might have occurred even without the application of this technique. A larger group of patients was assembled, rather than selected, because it was not yet known if this method was of value nor what, if any, the indications for its use might be. The results of this work were read before the annual meeting of the American Psychiatric Association in May, 1950. Nothing dramatic or revolutionary was demonstrated in this analysis of 154 treated patients, but by this time it had been observed that the amount of clinically manifest affect was directly related to effectiveness and that the manic phase of manic-depressive psychosis responded remarkably well and immediately. The "why" of the remarkable and almost invariably predictable response of the manic to atropine toxicity is as much a mystery today as it was when its effectiveness was first observed. In the schizophrenic reactions, a crude rule of thumb was found to be generally applicable in predicting response to multiple periods of atropine toxicity: "The greater the manifest anxiety, the better the response." Grisell and Bynum's paper (6) deals with this observation and confirms this clinical observation. Goldner (5), subsequently, began experimenting with scopolamine as the toxic agent rather than atropine, and he observed the same therapeutic results and the same margin of safety previously shown for atropine sulphate. He gave as much as 200 mg. (equivalent to 400 mg. of atropine) intravenously, without complication or untoward effect.

It has now been demonstrated experimentally that atropine sulphate has an enormous margin of safety; that in sufficient amounts, it can produce a predictable level of coma from which recovery is spontaneous; and that when administered for the production of multiple toxic periods in the psychotic reactions, certain patients improve both clinically and by psychological tests.

The general reluctance of physicians to administer a drug in greater than traditional doses seems inexplicable when one considers the heroic doses of insulin sometimes essential for insulin coma therapy. A significant reason might be found in the physician's belief that he can reverse an insulin coma with glucose—which indeed he can, except in 0.5 per cent of patients who die despite the vigorous use of this antidote. With atropine in toxic doses, there is at present no adequately demonstrated antidote—a serious consideration for those contemplating using this technique of therapy. Of an estimated 500 patients so treated, with approximately 10,000 treatments, there has been one death.

Unknown to the physician, the trained personnel on the treatment ward had been transferred elsewhere and replaced by attendants who were not thoroughly familiar with the nursing-care procedures. The patient, who was an obese male, developed a febrile reaction. The patient was sponged with ice water and alcohol, and the temperature brought back to

normal. Unfortunately, it was not recognized that the patient's temperature was prone to rise again during the same treatment, and the patient was covered up with several blankets and his temperature not checked again for half an hour. At this time the temperature was beyond the limits of the clinical thermometer, and the patient died. A post-mortem examination revealed no organic brain lesions but was unsatisfactory because of large numbers of bacteria in the tissue. This was apparently due to a terminal bacteriemia. Although, subsequently, there have been patients who developed hyperthermia during a specific treatment, the elevation in temperature has always been controllable through the application of ice water sponges. On subsequent treatments, a patient having a hyperthermic reaction is unlikely to respond in a similar manner.

In Dr. Schwarz's paper (9) you will find the statistical results of atropine toxicity in a group of patients, in most instances administered atropine in preference to insulin and EST, which were also available in the hospital. We have observed that the results of atropine toxicity therapy approximates those of insulin coma therapy, but we feel that much more needs to be done before any final conclusions and comparisons can be drawn. There seem to be some significant differences. In atropine toxicity therapy diagnostic category and duration of illness are of no prognostic importance. Many of the patients, who will be reported upon today, would not have been considered for insulin coma therapy because of either the duration of their psychosis or because of the clinical diagnosis. A close correlation has been found between prognosis with atropine toxicity therapy and the patient's functional clinical status. There are several major areas of investigation which, in my opinion, are yet to be fully explored. The first is into a further understanding of the psychological factors involved in the therapy; the meaning of treatment for the patient; as well as what is undoubtedly of significance, the meaning of the treatment for the physician, the nurses, and the attendants. The unconscious meaning, or perhaps more properly the unconscious perception, of the entire therapeutic effort has, I believe, significance of major and perhaps decisive influence on the outcome. Insight into some of these factors has already been obtained, but they do not seem to differ greatly from the psychological factors delineated in the other techniques of somatic therapy. Major importance can be assigned to an understanding of the chemical basis of action of atropine. The effects of atropine on the autonomic nervous system are well known, but a precise understanding of the effects of the blocking of acetylcholine in the central nervous system will require careful laboratory investigation. Although the relationship is not clear, it is interesting to learn that both Thorazine and reserpine are reported to have effects similar to atropine in certain areas of the brain.

Selection of patients for atropine toxicity therapy is another problem which requires further delineation and description. We speak of manifest anxiety and of affective components as being important in prognosticating the effectiveness of atropine toxicity, but these seem relatively crude clinical measures, too subjective in nature to be validated without the assistance of psychology. Careful appraisal of our prognostic criteria, which differ from those of insulin coma therapy, is desirable. If, after further study, we find that diagnostic category and duration of illness are not significant in prognosis, it may well mean that numerous patients who otherwise would not be accepted for insulin coma therapy might be treated with benefit to themselves.

Of immediate practical implication is research into the development of a specific antidote for atropine toxicity. The peripheral effects of atropine toxicity can be counteracted by several drugs, the most promising of which seems to be esserine. There has, as yet, been no important work done in this area. Whether or not esserine will counteract the central mechanism of action of atropine, in large doses in the human, has not as yet been studied. Currently it is of academic interest to know that rabbits can live on a diet of belladonna leaves because their plasma contains an enzyme, atropinesterase. The complexities of enzyme chemistry make the follow-up of this lead a laboratory problem. In my opinion, the ideal antidote would be a substance which would inactivate atropine *in vivo* rather than

one which would counteract the action of atropine *in vivo*. As you know, the H-gasses; odorless and lethal in relatively slight concentrations, are specifically counteracted by atropine sulphate. They inhibit or poison the acetylcholine esterase and are toxic by virtue of the excessive amounts of acetycholine which builds up in the body following inactivation of the esterase. The H-gasses or their analogues cannot, of course, be considered as atropine antagonists because the denaturing of acetylcholine esterase by these agents is not reversible, and a number of hours is required for regeneration of the denaturated enzyme.

Investigation is continuing along several lines. The original technique has been modified, consistent with new facts as they have been understood. Up until May, 1956, patients receiving atropine toxicity therapy have had no concurrent occupational, recreational, or psychotherapy. Since it is known that the adjunctive therapies are important in the effectiveness of insulin coma therapy, Miller (8) has recently made modifications so that patients get the injection of the drug at 3:00 a.m. and thus are able to participate in activity programs by noontime. We will know more of the effects of this change in time of administration at a later date. What was, not so long ago, a massive dose of 32 mg. of atropine sulphate, now appears homeopathic in comparison with the 200 mg. now commonly used as physicians have gained confidence in the safety and effectiveness of atropine toxicity therapy. The addition of chlorpromazine in some cases has been done on clinical grounds, and the results of combining atropine toxicity therapy and one of the tranquilizers will be commented upon in Dr. Schwarz's paper (9).

The therapeutic results, the simplicity and economy of administration, and the demonstrated safety of massive doses of atropine sulphate encourage us in our investigations. We hope that others will be encouraged by these presentations to carry on research which will add to our knowledge and increase the effectiveness of this technique of somatic therapy.

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NORTHVILLE STATE HOSPITAL
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SYMPOSIUM ON ATROPINE TOXICITY THERAPY

Pharmacology, Procedure and Techniques in Atropine Toxicity Treatment of Mental Illness

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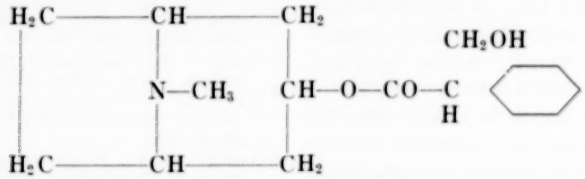
Atropine is a racemic mixture of the optical isomers of hyoscyamine in equal parts. Most of the potency of the drug is due to the levorotatory isomer. The chemical structure is that of an organic ester formed by the combination of an arometic acid, propic acid, and a complex organic base, either tropine or scopine. The chemical structure is shown below:



While this drug has been synthetically produced, its most prevalent source continues to be the widely distributed Solaneacea plants. The existence and use of atropine are both ancient and widespread. Preparations were used in Galen's time.

Atropine acts as a parasympathetic depressant by blocking the action of acetylcholine. This is specifically a blocking of the muscarinic effects of acetylcholine; i.e., the action on the smooth and cardiac muscle and the endocrine gland cells. This is in contrast to its action on ganglia and skeletal muscle although there is some evidence of blocking effect on autonomic ganglia.

The result of this blocking action stimulates overactivity of the sympathoadrenal system. Normal adrenergic impulses dominate following the blocking of the cholinergic nerves. Central and peripheral phenomena are observed.

The peripheral phenomena are readily observed. There are mydriasis and cycloplegia, inhibition of respiratory secretions, relaxation of the peribronchiolar musculature, cardiac acceleration, inhibition of sweating, decrease in tone and peristalsis and increase of sphincter tone in the gastrointestinal tract.

The central effects of atropine are less well known. The phenomena of restlessness, delirium, delusion, hallucinations and coma are known. The mechanism of this action has not, as yet, been fully established. While it has been demonstrated that acetylcholine is essential for peripheral neurophysiological functioning, attempts at establishing the role of acetylcholine in the central nervous system have not been specifically defined. Numerous works have been done, only a few of which can be reviewed at this time. It is interesting to note that Mann *et al.* (6) have demonstrated that nervous tissue alone is capable of synthesizing acetylcholine *in vitro*. Chute and associates (7) observed that acetylcholine was released in the perfusion fluid flowing through the isolated cat brain. Miller and his co-workers (8) studied the effect of eserine and acetylcholine when applied locally to the cortex of cats. They found that atropinization abolished the electrocorticogram spikes induced by eserine. These findings suggest that the blocking of acetylcholine utilization by atropine is partially responsible for the central effects of the drug.

Veit and Vogt (9), using 4 to 20 mg. of atropine sulfate per kilo in cats and dogs, were able to show that the highest concentration of the drug is found in the cerebral and cerebellar cortices, caudate nucleus, and the midbrain, with appreciable but smaller concentration elsewhere; suggesting again that atropine's central effect is related to the blocking action of acetylcholine in areas of high concentration of neuronal cell bodies.

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Utilization of atropine sulfate in toxicity therapy requires the use of 50 to 400 times the customary dose of the drug. At the present time, drug dosages vary from 32 mg. to 200 mg. per treatment. The clinically observable phenomena with this dosage of the drug fall well within the previously described toxic effects of the alkaloid. Marked drying of the mouth and other mucous membranes is observed. The skin becomes dry and warm. An evanescent rash, which is inconsistent in its appearance, may appear over the face, neck, and upper part of the body. The pharmacology textbook description of a weak pulse and rapid cardiac rate has not been observed. There is an immediate acceleration of the pulse which seems directly related to the injection rather than to the effect of the atropine. Within a brief period of time, the pulse returns to a stable rate well within the normal for the age group of the patient being treated. Occasional extra systoles are observed, but these are neither persistent nor prominent. There is a slight rise in blood pressure which, as with the pulse, soon reverts to a near normal level for the individual and remains consistent at that level throughout treatment. Respirations are frequently increased in the early part of treatment again, as with the pulse, usually return to normal levels and remain so throughout the treatment. Urinary urgency and difficulty in initiating micturition are frequently observed.

Signs attributable to the central effects of the drug include restlessness, excitement, confusion, weakness, giddiness, muscular incoordination, and speech disturbance. Nausea and occasional vomiting occur. The clinical picture is one of an acute brain syndrome in which memory is disturbed, orientation faulty and in which illusions and hallucinations, frequently visual, are common. The sensorium is clouded, and delirium proceeds to coma. In contrast to what might be expected, the restlessness, excitement, confusion, etc., do not usually give rise to behavioral disorder. Patients pass through these phases in a fairly comfortable state, and only rarely have there been occurrences of aggressive or disturbed behavior. Invariably, a few kind words from one of the nurses or attendants relieve the anxiety in this induction stage, and the patient will usually rest comfortably in bed through this period.

Following these early signs a state of coma, or near coma, follows. A treatment level that roughly corresponds to stage three of insulin coma therapy persists. Perception becomes distorted but does not completely disintegrate. There is usually sufficient motor activity intact so that a fairly well-organized movement toward an external painful stimulation can be demonstrated. A Babinski reflex is found in a number of cases. Quite frequently, organized repetitive motor activity is observed. In the faces, this is frequently evident as expressions, ranging from seemingly complete happiness to marked pain. Circumoral movements, including sucking, eating and smoking, are noted. On occasions, coordinated hand movements, such as smoking or eating, are combined with the facial expressions. Low mumbling speech is frequently observed. On occasions, more extensive body movements are noted.

While there are marked alterations of higher functions and evidence of release of inhibitory centers leading to neurological phenomena, thus far we have not encountered difficulties with seizures. We have not attempted to utilize treatment of this type with patients who have clinically demonstrable epilepsy. However, there have been several patients who have had abnormal EEG patterns, and even in these patients there has been no suggestion of seizure activity. This, seemingly, would correlate with laboratory studies in which atropine abolished cortical spike activity.

Procedure

All candidates are seen in a somatic therapy staff. At this staff, history is reviewed and the patient seen. Selection of patients for this treatment is determined by what is yet a loosely compiled set of criteria. In general, these include the following: Anxiety in some degree must be evident, the significance of which will be fully discussed in another paper. It seems essential that the patient be still struggling with his illness and have not achieved an equilibrium of symptoms which abolish his anxiety. As suggested from this, almost all of the neuroses, including the obsessive neuroses which display anxiety, are considered as fairly good candidates for

atropine treatment. In the psychoses, this same general principle applies with the exception of depression. As with insulin therapy, atropine treatment has been found to be ineffective in the treatment of depressions. For this reason they are rarely considered for the treatment unless there is a considerable degree of anxiety or agitation associated with the depression. Frequently, it is necessary in these situations to follow the course of atropine with electroconvulsive therapy, for as the agitation and anxiety are reduced by atropine toxicity therapy, the depression becomes more prominent.

The physical status of the patient is also reviewed. Thus far, few contraindications to the treatment have been found. These are the history of, or any suggestion of, glaucoma and impairment of cardiac function. Further consideration, as far as the physical aspects of the treatments, includes evaluation of liver function, inasmuch as atropine is detoxified in the liver. History of a chronic otitis media or sinusitis is of importance, for activation of such pathology in atropine treatment is common, due to the drying of the lining membranes. Nutritional state is also considered, for invariably there is weight loss associated with the treatment. Marked malnutrition is considered a contraindication.

The treatment ward consists of two 15-bed units. Physical arrangement is much like that of an insulin unit with the same precautionary emergency trays, etc., readily available. One significant feature of an atropine treatment ward is the desirability of air conditioning or dehumidification during the summer months as control of external air temperature is necessary to forestall hyperthermic complications.

Ideally, a nurse should be available for the active treatment phase as well as the recovery phase of the treatment period. Attendants, who have been trained under the nursing personnel, carry out the majority of observations and recording. The simplicity of the treatment readily allows such an arrangement, and maximum safety for the patient can be assured with this comparatively minimal number of personnel. At the present time, our units are operating with one charge nurse who is in attendance beginning with the administration of the atropine and through the first five hours of treatment. Two attendants on each ward assist her in carrying out the initiation of the treatment process and observations of the patient. Following this, the wards are covered by a charge attendant and an assistant attendant on each of the shifts of each ward. Thus far, this arrangement has proved successful; providing adequate coverage for the safety of patients. It should be emphasized that in this critical area of personnel, atropine toxicity treatment requires far fewer personnel than in a corresponding insulin coma unit.

The actual treatment schedule is as follows: The patient is awakened at approximately 3:00 a.m. A liberal amount of time is allowed for the waking process so that the patient does not perceive the injection of the drug as an attack during sleep, nor the twilight wakening state. Atropine is injected in individually determined doses, depending upon clinical factors. Temperature, blood pressure, pulse, and respiration are taken and recorded at this time. Patients are then requested to return to bed where they will remain until treatment is over. Restlessness may appear during the ensuing one-half to three-quarters of an hour. Side rails are used to prevent the patients from injuring themselves by falling. Usually, firm direction, such as telling the patient to go to sleep, is sufficient to control behavior. Treatment stage level is reached in approximately one-half to three-quarters of an hour. Periodic observation of the patient continues through the entire treatment time until the patient is sufficiently in contact to get out of bed. These periodic observations include checking of pulse, respiration, blood pressure, and an evaluation of body temperature. The latter is accomplished by comparing the patient's with that of the examiner. If the former is elevated, a thermometer is used to obtain an accurate reading. At alternate observation periods, the patient receives ¼ per cent eserine ophthalmic ointment in each eye. Cold cream is used on the lips to prevent marked chapping and drying.

The treatment lasts for varying lengths of time, depending upon the individual. Some patients are quite awake by 7:00 a.m., while others continue in the deep sleeping state until 10:00, 11:00 and even 12:00. Although the treatment level is frequently much lighter

in a matter of five or six hours, patients are encouraged to remain in bed until there is fairly good orientation, muscular coordination and ability to cooperate. There have been occasions when patients, arising too early, have fallen and injured themselves.

The most serious complication encountered in treatment is the effect of atropine on temperature regulation. It is, as yet, unclear whether alteration of temperature control is effected because of peripheral action or central action. If central, this would suggest a rather profound effect of atropine on the hypothalamic area, the location of temperature regulating centers. This leads to interesting speculation concerning the possibility of therapeutic effect being related to alteration of the hypothalamic functioning and a possible relationship to the therapeutic effects of tranquilizing drugs.

The problem of temperature regulation becomes apparent in those patients who exhibit marked motor activity during the early phases of treatment. The heat regulating mechanism seems unable to adjust to the minor increase of heat produced by activity.

Thus far, external applications to reduce temperature, such as ice packs or ice water sponging, have adequately controlled hyperthermia. Rapid institution of these measures easily controls this complication. Other supplimentary measures may be required, such as I.V. fluids and sedation. Our choice has been sodium amytal in suitable amounts I.V. or I.M., and seldom more than 7½ grains.

Minor complications, such as nausea, are controlled by use of Dramamine. Accomodation difficulties of off-treatment days are controlled by ¼ per cent eserine ophthalmic ointment and sunglasses. Simple urinary sedatives are used for bladder irritability and laxatives for constipation. Tremor responds well to small doses of sodium amytal by mouth.

When sufficient orientation and coordination have been reestablished, patients are taken to dinner in a socialized group. Participation in activities, both in the preparation of food and in the care and maintenance of the dining area, is encouraged. Group activities, combining both the male and female wards or the individual wards, are then pursued. Activities are directed toward socialization. Functions, such as organized card games, occupational therapy, dances, etc., are on a scheduled basis. Other activities, such as walks, spontaneous ball games, etc., are encouraged. Participation on the part of the personnel, with close interpersonal relationships, is encouraged both in the activities and on individual basis. We routinely administer therapy on Mondays, Tuesdays, Thursdays, and Fridays until a course of treatment has been completed. The length of a course is determined on clinical grounds and may vary from six to thirty treatments.

The general orientation of all the personnel towards the patients in therapy is very sharply defined. While in the actual atropine induction stages, the patient experiences phenomena in which conflictual material comes to his awareness. The hallucinatory experiences and the illusions, particularly on the first two or three treatments, are quite disturbing to the patient. Personnel are frequently the stimuli for illusions concerning significant figures in the patient's life. As the patient passes through each individual therapy day and throughout the entire course of therapy, the process of repression tends to minimize these experiences. The therapy reproduces conflictual experiences with an associated emotional discharge and subsequent repression. These experiences are returned to the unconscious. However, because the patient has had these experiences and is inquisitive about them, he will frequently approach the physician, attendant, or nurse for information concerning them. It is felt that therapy is effective inasmuch as an emotional discharge is brought about in relation to the experiences during therapy and that repression follows. The approach of the personnel on the ward is designed to assist the repressive forces. Consequently, personnel are instructed to give only minimal information concerning the experiences which the patients have had in treatment, and are not in any way to attempt to discuss the content material, even though it may at the time appear to be extremely traumatic and very much on the surface.

Therefore, it is felt that the content is, by and large, suppressed and repressed. Activities are centered around immediate functioning and living. Social participation is particularly en-

couraged for the reestablishment of patterns of better interpersonal relationships.

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NORTHVILLE STATE HOSPITAL
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SYMPOSIUM ON ATROPINE TOXICITY THERAPY

A Study of the Relationship between Anxiety Level, Ego Strength and Response to Atropine Toxicity Therapy

JAMES L. GRISELL[1] AND HAROLD J. BYNUM

In one of the first published reports on the use of atropine toxicity therapy, Forrer (3) suggested that this somatic treatment is most effective in patients who either exhibit tensional states and/or ego structures which are still relatively intact. This observation was an interesting one because of its theoretical implications and, if validated, would provide a criterion for selecting patients for treatment. This paper is the report of a study designed to test the validity of Forrer's observed relationship between anxiety and ego strength and favorable prognosis in patients who have received atropine therapy.

Specifically, four hypotheses were tested in this study: 1) There is a positive relationship between the amount of pre-treatment anxiety and post-treatment adjustment. 2) There is a positive relationship between pre-treatment ego strength and post-treatment adjustment. 3) The level of anxiety will be reduced following treatment. 4) Ego strength will increase following treatment.

Subjects

The subjects for this study consisted of 28 patients from the Northville State Hospital who were given a course of atropine treatments. The group consisted of seven patients with a diagnosis of schizophrenic reaction, chronic undifferentiated type; one patient with a diagnosis of schizophrenic reaction, schizo-affective type; 13 patients with a diagnosis of schizophrenic reaction, paranoid type; two patients with a diagnosis of psychoneurosis; and five patients were diagnosed involutional psychotic reaction. There were 14 females and 14 males in the group.

Measuring Instruments

Two measures of anxiety and two measures of ego strength were utilized in this study. As measures of anxiety, Taylor's Manifest Anxiety Scale (5) and Elizar's Rorschach Content Test (2) were used. The Taylor Manifest Anxiety Scale was developed at the State University of Iowa. It consists of 50 items from the Minnesota Multiphasic Personality Inventory which were judged by clinicians to measure anxiety, and which correlated highest with total anxiety score. It is a self-inventory type test where the measure of anxiety is the number of anxiety symptoms the subject is willing to attribute to himself.

Elizar's Rorschach Content Test is a measure of anxiety based on the content of a subject's Rorschach responses. Elizar looked upon anxiety as an inner state of insecurity which may take one or more of the following forms: Fears, phobias, lack of self-confidence, extreme shyness, ideas of reference, and marked sensitivity. The measure is a function of the frequency with which any of these themes occur in the content of the Rorschach responses.

The two measures of ego strength used in this study were Klopfer's Prognostic Rating Scale (4) and Barron's Ego Strength Scale (1). Klopfer's Prognostic Rating Scale is a device which measures the adjustment potential of the individual on the basis of responses to the Rorschach. It evaluates four aspects of ego strength in terms of how the subject deals with the ink blots. These areas are: reality testing, emotional integration, self realization, and master of reality situations.

Barron's Ego Strength Scale is made up of 68 items from the Minnesota Multiphasic Personality Inventory. It is a self-inventory type of test similar to the Taylor Scale. The scale was developed originally for the purpose of predicting success in psychotherapy. Its inclusion in the test battery is of interest, not only as a measure of ego strength, but also to see how well a test which was specifically designed to predict success with psychotherapy can also predict success with a somatic therapy.

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The criteria measure of patient adjustment was a seven point rating scale developed by the Psychology Department of the Northville State Hospital. This scale was devised to give a gross evaluation of a patient's adjustment potential. This evaluation is based on three factors: (1) kind of ward on which the patient must reside, (2) the work capacity of the patient, and (3) the kind of privilege card the patient can tolerate. The scale covers all patient conditions ranging from closed deteriorated ward residence with no work capacity and no privileges, to the patient who is out of the hospital handling the same kinds of responsibilities he had prior to his hospitalization.

A reliability study was carried out with this rating scale by correlating the ratings of five pairs of psychiatrists. The mean of these correlations, computed with Fisher's Z transformation, was .68. This suggests that while there is some agreement among the psychiatrists in each pair, more than half of the total variance is unaccounted for by this correlation and must be attributed to error.

Procedure

Patients who were placed on atropine therapy were first approved for this treatment by the somatic therapy staff. When a patient was suggested for this treatment, the Psychology Department was notified. One member of the department, who was assigned to this project, then administered the measures used in this study. These included the Rorschach, Taylor's Manifest Anxiety Scale and Barron's Ego Strength Scale. Scores for Klopfer's Prognostic Rating Scale and Elizar's Rorschach Content Test were then computed from the patient's Rorschach protocol. In all cases, this testing was done in the two-week period before the patient was placed on treatment. At the time the patient was considered for treatment, he was also rated on the seven point scale by the psychiatrist in charge of somatic therapy staff.

Four months following the termination of treatment, the same tests were administered again. In addition to the testing, the patient was also rated by his ward physician on the seven point rating scale. This rating served as the criterion measure for the study. The four-month interval was chosen because it has been noted that maximum improvement may not be realized until this period of time has elapsed.

Results

The results to be reported here are derived from two sources: 1) the correlations between the pre-treatment test scores and the ratings obtained four months post-treatment, and 2) the pre- and post-treatment means for all measures used in the study. In evaluating the significance of the statistics, the 10 per cent level of confidence was employed rather than the traditionally more conservative five per cent level, in order to minimize the possibility of rejecting a genuine relationship that might be otherwise obscured because of the small sample employed.

Table 1 contains the correlations of the pre-treatment test scores and the post-treatment ratings. Of the anxiety measures employed, only Taylor's Manifest Anxiety Scale has a significant correlation with the criterion. This correlation is .58. This finding gives support to the first hypothesis: that there is a positive relationship between the amount of pre-treatment anxiety and post-treatment adjustment. Elizar's Rorschach Content Test does not correlate significantly with the criteria ($r = -.00008$), but its lack of validity together with its significant correlations with the Taylor Scale and the Klopfer Scale suggests that it may have some use as a suppressor variable in a multiple prediction equation.

Both measures of ego strength correlate significantly with the criterion. The correlation

TABLE 1.—The Correlation Matrix of Pre-treatment Tests and Post-treatment Ratings

Measure	Elizar's Rorschach Content Test	Klopfer's Prognostic Rating Scale	Barron's Ego Strength Scale	Clinical Rating No. 2
Taylor's Manifest Anxiety Scale	.41*	.60*	−.58*	.58*
Elizar's Rorschach Content Test		.48*	−.11	−.00008
Klopfer's Prognostic Rating Scale			−.11	.45*
Barron's Ego Strength Scale				−.42*

* Significant beyond the 10% level.

TABLE 2.—MEAN DIFFERENCES FOR PRE AND POST-TREATMENT MEASURES

Measure	Pre-treatment Mean	Post-treatment Mean	Mean Difference	t	p
Clinical Rating	2.72	4.72	2.00	11.02	.01
Taylor's Manifest Anxiety Scale	26.75	12.60	14.15	6.03	.01
Elizar's Rorschach Content Test	10.85	8.17	2.68	3.13	.01
Klopfer's Prognostic Rating Scale	2.03	3.16	1.13	2.42	.05
Barron's Ego Strength Scale	34	44	10	5.71	.01

between Klopfer's Prognostic Rating Scale and post-treatment rating is .45. This finding is in support of the second hypothesis tested: that there is a positive relationship between the amount of pre-treatment ego strength and post-treatment adjustment. Barron's Ego Strength Scale, on the other hand, had a significant but negative correlation with the criterion. This is a result which is in specific contradiction to the hypothesis tested. Also of interest is the fact that this scale had a negative relationship with everything else. The correlation between the Barron Scale and the Taylor Scale is −.58, which is significant.

The results from the pre- and post-treatment testing, as seen in table 2, suggest that the patients used in this study were improved following treatment. The mean of the pre-treatment ratings was 2.72. The mean of the post-treatment ratings was 4.72. The difference between these means is significant beyond the confidence level adopted for this study.

There was, likewise, a decrease in anxiety and an increase in ego strength as measured by the pre- and post-treatment tests. For the anxiety measures, the mean pre-treatment score on the Taylor Manifest Anxiety Scale was 26.75. The mean post-treatment test score was 12.60. This difference of 14.15 is significant. On Elizar's Rorschach Content Test the mean pre-treatment score was 10.85. The post-treatment mean was 8.17. This yields a difference of 2.68 which is also significant.

For the measures of ego strength, the mean score of Klopfer's Prognostic Rating Scale before treatment was 2.03 and the mean post-treatment score was 3.16. Although this difference is only 1.13 it is significant at the accepted confidence level. Barron's Ego Strength Test had a pre-treatment mean of 34 and a post-treatment mean of 44. This difference of 10 is also significant beyond the accepted level.

These results are in support of the third and fourth hypotheses: that there would be a decrease in anxiety and an increase in ego strength when measured by the psychometric devices employed in the study.

DISCUSSION

These results are encouraging because they lend some support to the four hypotheses under investigation. However, this support is not complete in all areas. Of primary importance here is Barron's Ego Strength Scale. The second hypothesis predicted a positive relationship with this scale and the criterion, but it was negative instead. This finding is probably due, in part at least, to the nature of the measuring instrument. Barron's Scale, like Taylor's, is a self-inventory type of instrument derived originally from Minnesota Multiphasic Personality Inventory items. With these tests, the subject has to state whether certain statements, related to the presence or absence of mental symptoms, apply to himself. On the Taylor Scale, attributing a large number of such symptoms to one's self is indicative of high manifest anxiety. On Barron's Scale, the measure of ego strength is the number of symptom statements subtracted from 68, the total number of items. It is this last subtraction process which inverts the scores, accounting for the negative correlation with the Taylor Scale. The negative correlation with the criterion, therefore, causes one to ask whether the two tests are not measuring much the same thing. Also, the low correlation between Barron's Scale and Klopfer's measure of ego strength suggests that Barron's Scale does not get at the same factors measured by Klopfer's Scale.

Another important factor in this study is the fact that no control group was utilized. Ideally, a control group for this study would have the same things done to it as was done with the experimental group, except that they would be given a placebo rather than an active treatment

compound. The administrative difficulties involved in using such a group were insurmountable. The absence of a control group, however, does not make these findings useless, but this does pose serious limitations on the kinds of things one can say about the results. The differences reported are still valid, but because such variables as the use of atropine and attention factors are confounded, there is no way to assign the variance contributed by each of the uncontrolled variables. One can only say that these patients got better, they had less anxiety, and more ego strength, as determined by our measurement procedures.

Because of this one serious limitation, this study can best be thought of as a pilot investigation into the changes which occur in the process of recovering from a psychotic episode. It points the way to two different kinds of researches for the future: one may be thought of as theoretical; the other, as applied.

In the area of theoretical research, these results should serve to generate a whole host of fruitful hypotheses about the relationship between the therapeutic process and personality. It would be of interest to determine whether similar results would be obtained with electric shock, insulin, the tranquilizing agents, or hospitalization *per se*. Also, since the physiological effects of atropine are known to some degree, it should be possible to generate testable hypotheses involving these effects, the physiological reactions of anxiety, and the results of this study.

In the area of applied research, this study gives the promise that the observed relationship between anxiety, ego strength and therapy could be used in the more effective selection of patients for somatic treatment. The measures used here, plus other continuously distributed variables, could be combined into a multiple prediction equation which, if properly constructed and adequately cross-validated, should predict therapeutic outcome more effectively than any other method.

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SYMPOSIUM ON ATROPINE TOXICITY THERAPY

Repression and Atropine Toxicity Therapy

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Repression is a process or mechanism by which anxiety laden impulses, thoughts, and emotions are made unconscious. As a defense, it is constantly in operation throughout life; however, in the order of defenses, it is the earliest and most fundamental. In the earliest development of the ego, repression has a profound influence which can be readily seen in the amnesia for the early years of development, dating through almost all of the psychosexual phases. While this mechanism excludes, from the ego, recall of this traumatic period, the impulses associated with the period, and particularly the affective associations of the period, continue to exist in the unconscious and exert a pressure for expression. Since this material is ego dystonic, the ego defends against the expression to maintain integration. Stated in another way: the repressed conflicted material, if experienced in the ego, gives rise to anxiety of such a degree as to make the ego alter its state to reduce anxiety to a tolerable level. This is, of course, a simple expression of the ego defensive system.

The difference between mental health and illness depends largely upon whether repression in childhood has been successful. If repression has been successful, the problems arising in adult life will be handled with defenses which are within the range of normal. However, if in adult life the individual continues to struggle with the anxiety and fears associated with the early developmental stages, it is because there has been a failure of the resolution and repression of the conflicts associated with these phases. The defenses which the ego develops to handle the anxiety, created by the conflictual material, will be determined by the intensity of the impulses or earliness of fixation in development or the degree of regression necessary to handle the anxiety. Also important is the amount of associated affect bound to the repressed material. In general, the earlier the source of conflictual material, the greater the need for defense, or if expressed in terms of symptom formation, the more severe the symptoms. Of the patients seen at somatic therapy staff for consideration for atropine toxicity therapy, the vast majority have problems related to the oral phase of development. In many of the cases, symptoms may appear to be related to higher developmental levels but when closely examined are frequently found to be the results of defective repression at the oral level. Symptoms and other secondary manifestations of illness, such as characterological features, are therefore usually severe. Clinically, this may be observed as the patient's subjective experience of marked anxiety or, objectively, as defenses which markedly alter ego functioning in terms of external adjustment.

In these individuals, there is a constant barraging of the ego by instinctual pressures. The ego consumes enormous quantities of energy in establishing and carrying out defenses in order to maintain some degree of integrity. The energy ordinarily utilized by the ego for extra-ego investments is markedly reduced. Investment or cathexis of objects is thus markedly curtailed, This is particularly noted in the details of the patient's interpersonal relationships and disruption of social adjustment, principal reasons why these patients are hospitalized. A plan, to be therapeutic, must be devised to free some of the energy for the reestablishment of the ego, in relation to external objects, in a true reality relationship.

In order to accomplish this, one or a combination of factors must be considered. First, a reduction of the intensity of the instinctual drives, which lead to conflict, would bring relief to the ego. While some of the therapies, particularly the drug therapies, may in part be effective by this means, in general there is no known method of directly reducing the intensity of instinctual drives. Second, in the

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original repression of the conflictual material, there is an accompanying repression of the affective components which, while in the unconscious, exerts a constant pressure for expression. A therapeutic program designed towards release of this bound, affective, energy would be one method of approaching the problem of freeing ego energies. Third, a program stressing reinforcement of ego defenses or exploiting ego strength is another method of assisting the ego. Most ancillary therapeutic programs are, at least in part, directed toward this latter goal: in this approach, is implied, an ego sufficiently free of anxiety to cathect external objects. In order to arrive at those goals of therapy, which are primarily concerned with this last consideration, we must help the patient to progress to a point where he can make use of the ancillary therapeutic facilities available.

A classical treatment method involves the bringing to awareness of conflictual material with subsequent abreaction of the emotional components related to the conflict. The integration of the personality or alteration in defense patterns subsequently takes place, freed of ego restrictions created by anxiety. Involved in this treatment method is the very important factor of the therapist, with whom the emotional material is experienced. In an appropriate therapeutic setting, emotional awareness of the conflict, as well as the abreaction of affect, takes place. This, however, cannot be done without a considerable degree of ego strength and reality perception, necessary in order to observe the phenomenon which is being experienced, i.e., the ability of the ego to observe it's own functioning. This, in itself, requires energy on the part of the ego for accurate perceptive functioning. The patients who have experienced sufficient ego defunction to be considered for somatic therapy, at the time that they are being seen in somatic therapy staff, have insufficient ego strength and insufficient ego available to experience this type of therapeutic relationship. In these people, a treatment method must be considered in which there can be an abreaction of the emotional components or a strengthening of the ego defenses without requiring the ego to utilize energy for observation or relationships to external objects through investments of its own energies.

In atropine toxicity therapy, an organic brain syndrome is drug induced. A purposeful delirium is created in which there is a release of higher functions and in which conflictual material readily becomes accessible to the altered state of awareness. In this framework, ego functioning is altered considerably. Repressions and partial repressions find ready access to awareness. While it is impossible to have access to all or even a large part of the material which is experienced in treatment, sufficient information has been compiled by observation and examination to reveal the type of experiences that the patients have in treatment.

By observation, it is apparent that marked emotional experiences takes place. Facial expressions vary from peaceful repose to marked pain and crying. These may very rapidly change to smiling and laughing. Some are observed to "suck", "smoke", "eat", and hallucinate various activities. Picking at clothing, common in the organic states as well as delirium tremors, has been observed. There are frequently associated, upper extremity movements which accompany these manifestations. While other movements have been observed, the most consistent pattern has been movements correlated with oral activity. Body movements, such as rising, have been observed and, very rarely, masturbation. By and large, most of the observed material has been related to oral phenomena. When a well-integrated motor organization exists, striking of imaginary matches to light imaginary cigarettes has also been observed. The nurse or the attendants have been called by parental designations or by the names of other significant figures in the patient's life. Careful observation and tracing of the persons with whom the personnel have been misidentified in these illusions have revealed a specificity and important significance for the individual experiencing the illusion. When the patient spontaneously produces material related to these experiences, there is invariably a marked affective component revealed concerning the experience. This has been substantiated by thorough and detailed investigation of the subjective ex-

periences of a representative group of patients receiving atropine toxicity therapy. The affective component may vary from extreme agressiveness to marked feelings of warmth and love. Within any one treatment, a display of marked ambivalence or liability in the affective components may occur. This may be observed in any one specific treatment or over the entire course of treatments. Evidence of marked emotional discharge taking place in the patients, while in treatment, appears conclusively demonstrated. Observation suggests that, while in therapy, conflictual experiences gain access to awareness with the subsequent safe expression of emotion, allowing a considerable discharge of previously repressed emotional material.

Thus far, a description has been given of a process that is similar in many respects to other therapies that alter the ego state and allow emotional discharge to take place. Hypnotism and amytal interviews, as well as prolonged narcosis, are effective through similar mechanisms. The principal difference in this treatment is the apparent immediate relief of anxiety obtained through the abreactive experience while in therapy. Very frequently, after the first or second treatment, patients remark on how much more relaxed they feel. In other patients relief is not as rapid and may not appear until treatment has been completed for some time. In either case, the relief of constant anxiety is reflected in the available energy which the ego now has for functioning. This becomes apparent in the relationships of patients to each other and to personnel. The observation of the patient's ability to invest in objects outside of himself is made and capitalized upon. This emphasizes the need for a complete therapy program in which the energy, now available to the ego, can be utilized in the development of ego strength. Because of the reduction of the anxiety which the ego experiences, more effective adjustment becomes possible.

One major consideration is the relationship of personnel to the patient. The nurse and the attendant have functioned as stimuli for many of the hallucinatory illusions. The reactions to these stimulations frequently demonstrate marked ambivalence with expressions of both love and hate, particularly the latter. As patients begin to reintegrate their ego function, while emerging from a treatment (this might well be compared with the re-birth phantasies which have been suggested as a mode of action for insulin coma therapy), the same nurse or attendant, who previously functioned as the stimulus for an ambivalently experienced person from the past, now becomes a protective, warm, non-threatening figure, who protects the individual from bodily harm and, as soon as he is able to function, leads him to food. As still more integration and activity are possible, these same personnel then encourage participation in a more adult type of adjustment with both themselves and the other patients. Because of the reduction in anxiety, the patient now finds that he is able to invest energy in these external objects without destruction of the ego. They find themselves capable of making interpersonal relationships without the childhood fears and anxieties and, with this security, find that social relationships are realistically gratifying. This is a goal of therapy, and it is felt that atropine toxicity is a method by which this goal can be accomplished for many.

To illustrate material, thus far discussed, the following case is presented. Choice of the case is made because of the rather specific nature of the experiences which the patient had while in therapy.

Mr. R. F. is a 52-year-old, white, male, protestant, married, who has been hospitalized for living a "world of his own", flights of ideas, irresponsibility in contracting debts, and aggressive behavior toward his wife.

Background material is, unfortunately, brief in this case. The patient was unable to supply the material himself, and the outside sources were extremely limited. It is known, however, that the patient's mother was the dominant member in the family. She was markedly overprotective of the patient and gave the reason that the patient was the first boy on the mother's side of the family in three generations. The patient's mother felt that he "could do no wrong" and very little discipline was given. That which was given was exclusively verbal. This was in marked contrast to the experience of the other four siblings who were dis-

ciplined severely by the mother. The patient's father was considered to be insignificant by the insignificant by the family and was important only as the breadwinner. He was completely dominated by his wife. The overprotectiveness of the mother continued throughout the patient's life, and a letter, received by one of the sisters just prior to the mother's death, suggested that this sister take over her position and care for the patient. This care was particularly in the area of making good any of the patient's debts, for he had by this time begun to show signs of poor judgment, particularly in the financial area.

Little is known about the patient's early development. He was the first boy in several generations. He started school at the usual age and completed eight grades. His adjustment in school was considered to be consistent with his later life adjustment. In hospital he was quite gregarious with the other patients and had numerous, if superficial, friends. The patient discontinued going to school after the eighth grade because he felt he had sufficient education. He began working and continued his education in the form of reading. It was not unusual for him to sit up throughout an entire night reading and then go to his job without seeming to have any impairment in functioning. This has been consistent throughout the patient's entire life. He has had a vast number of jobs, some lasting only a few days and others lasting a number of years. The patient has never had difficulty in obtaining work and, seemingly, with the exceptions of the times when his manic-like behavior would interfere with work, had little difficulty in continuing to work. At the age of 22 the patient was married, and this marriage lasted for several years. Throughout the period of marriage, the patient displayed rather hypomanic behavior. There is little known about the sexual adjustment throughout this period of time, with the exception that divorce ensued after seven years for "incompatability". In his early thirties the patient again married but was unable to really settle down. He travelled extensively and became a salesman. He was restless and always had "big ideas". He did well at his sales jobs, frequently making from two to three hundred dollars per week. During the war he worked as a civilian for the Air Force Supply Depot. The patient had an extremely responsible position at the Depot and seemed to enjoy the prestige of his position. He continued in this position, functioning adequately, throughout the entire period of the war. At the close of the war the job was terminated, and the patient went to work for a company in Columbus, Ohio. Here he began to exhibit marked signs of manic behavior. He signed a number of checks which were for the expansion of the company, without first consulting the authorities in the company. His work seemed increasingly erratic, and the patient was found to be irresponsible, both in the carrying out of his job and by becoming involved in grandiose plans for expansion. Legal proceedings were resorted to, and the patient was committed to a state hospital. Commitment here followed a brief term in jail where it was observed that the patient was obviously disturbed. He remained hospitalized for approximately a year and one-half and received electroconvulsive therapy. While in the hospital, the patient's wife divorced him for unknown reasons. Following his discharge from the hospital, the patient went to Dayton, Ohio, where he shortly became "high". The patient soon became involved in a number of schemes; so many in fact that he could no longer keep track of supposed investments. He was again hospitalized at a state hospital and again received a course of treatment. This hospitalization lasted approximately seven months. On his discharge from the hospital on this occasion the patient came to Detroit to live with his sister who intended to carry out the last wishes of the mother by taking care of him. He obtained a job as a salesman for a building corporation. He was successful in his sales job, but he constantly expressed a desire to become an official in the company. Concurrently, he married for the third time. This wife was a widow whom the patient had known for approximately 20 years. Her husband had died approximately three years previously, and the patient and his wife had worked together for a brief time at the Air Force Depot in Ohio. Adjustment in this marriage was described, by both parties, as excellent.

The patient was observed by the wife to display the first noticeable symptoms in July, 1955. He had been doing well at his job as a

salesman but constantly insisted that he wanted to become assistant to the president of the company. In July of 1955, the president of the company brought a man in from Kansas City as his assistant, and he helped in reorganizing the company. It is felt that this was the turning point in the patient's behavior, for he was quite disappointed about not having been given the responsibility of reorganization or the position of assistant to the president. At the same time the patient began to experience impotency in his relationships with his wife. During August and September of 1955, the patient became extremely restless and very irritable. He began to develop a "number of big ideas" during this period and finally made an agreement with the president of the company to set up his own office separate from the company and sell the goods through his own organization. This was agreed upon in October of 1955, and the patient proceeded to hire a staff and rented an office without adequate financial backing to do so. He soon became involved in a number of other schemes which included the opening of two other offices for a business, the character of which was known only to the patient himself. The offices were furnished with large packing crates for desks and smaller crates for seats, to which were added a collection of disconnected telephones and a bottle of scotch. The latter was claimed to be essential to the business.

An appointment was made for the patient at Henry Ford Hospital, and he complied with this. It was felt that he was suffering from a manic episode, and hospitalization was recommended. The patient refused hospitalization, and grandiose ideas became more and more apparent. He made an appointment with a bank to make a loan for ten thousand dollars in order to get his business going. His wife was insistent upon his being hospitalized, and this developed into an argument concerning the grandiose material. The patient became quite upset and struck his wife during this argument. A friend was called, and help was obtained in hospitalizing the patient. He was found sitting in one of his offices, rambling incoherently about future successes which he anticipated in his business. Briefly hospitalized at Receiving Hospital, he was transferred to this hospital for further care and treatment. At the time of the original examination the patient was found to be slightly older than his stated age of 52. He was well developed and rather obese. His appearance was neat and showed interest in personal grooming. Overactivity was prominent, and the patient was unable to sit for any length of time. He was oriented as to self but not place or time. Hypermotor activity indicated a tremendous internal pressure. There was a tendency for flights of ideas, and the patient was totally unable to arrive at goals. He was highly circumstantial and irrelevant, as well as incoherent, in accounting for his recent past behavior. Thought content was extremely difficult to evaluate. Flightiness was so prominent that it was impossible to access such statements as the expression of resentment for his wife. At one moment he called her "my lady" and related what a fine and intelligent woman she was and in the next moment called her an alcoholic. He stated "the people, the police, came and got me when I hit mamma. I was working twenty-three days straight, sleeping on a couch and drinking coffee. You must have heard the girls I work for, I call them my girls, they are really not, but old maids." "They are not like my harum—I have a harum you know." He readily expressed grandiose ideas about three offices which he rented, but was unable to state that the businesses were in which he was engaged. He called himself a "business engineer". The patient denied hallucinatory experiences. Affect was definitely, markedly, elated. The patient assumed an air of importance and had a general grandiose demure. Elation seemed to be appropriate to the grandiose ideas being expressed. The doctor-patient relationship was considered to be positive but only in the sense that the patient recognized the existence of the physician and allowed him to continue to exist. Reality testing and insight into illness were markedly impaired, with very little true insight. The patient seemed to have some idea that he was unable to function adequately and stated, "I knew I'd crackup but I'll get over it." He immediately followed with poor reality testing by saying, "just let me get out of here, I'll be alright, I've got to finish some business." Capabilities at the time were markedly limited due to the hyperactivity and

overproductiveness. A secure closed ward was felt to be necessary. He was obviously unable to take part in any type of group activity until he came into closer contact with reality. The original diagnostic impression was that of manic-depressive psychosis, manic phase. Consideration for atropine therapy was immediately suggested. Five days after admission to the hospital, the patient was seen in somatic therapy staff. He had been placed on Thorazine with little effect. It was recommended that the patient receive a course of atropine therapy. The patient was placed on therapy approximately two weeks after his entrance into the hospital. The course of therapy and the patient's response to it were quite interesting. On the first day of treatment the patient had numerous experiences, one of which he reported spontaneously. During the recovery phase, as he attempted to get out of bed, he experienced an hallucination of a "pregnant bitch dog" lying under his bed. Every time he would put his foot over the side, the dog would become markedly aggressive, bark, and attempt to bite him. The expression of aggression was sufficient to cause him to remain in bed. He did so until the hallucination disappeared with reintegration of perceptive function. It is felt that the hallucination was probably stimulated by the nurse who gave firm directions that the patient was to remain in bed. While insistence was given in a kind, warm, fashion, it was firm and directive and in a distorted state could be perceived as an aggressive maneuver. The nurse on duty while the patient was receiving treatment was pregnant. As treatment progressed, there was marked improvement in the patient's contact with reality. He became able to slow down and integrate in the group activities, playing cards or playing in the gymnasium. Initially, he would play a fairly accurate game of either bridge or pinochle while still experiencing considerable pressure of speech and grandiose ideas. As therapy continued, the ideas became modified, and his attention span and ability to invest in external objects, markedly increased. On the fourteenth treatment day, a rather amusing but significant experience took place. The patient was found in the men's latrine standing by one of the stalls. He was tearing off pieces of tissue after rolling them off to some length. On inquiry into this activity, the patient responded that he recognized that it was foolish and that he was rolling out toilet paper, but nevertheless he felt that what he was actually doing was reading a ticker tape. It was only upon some insistence, on the part of the attendant, that the patient ceased this activity. As treatment grew to a close, the patient showed a marked integration of ego functions. Reality testing became much improved, and he was able to look back on his experiences leading to hospitalization in a fairly deep objective fashion. Interpersonal relationships were excellent, both with personnel and the other patients. The pre-morbid gregariousness of his personality was reestablished. He was now able to take care of his own wants and also assisted some of the other patients in their ward activities. Most significant was the patient's hallucinatory experience on the next to last day of treatment. He again experienced the hallucination of a dog under his bed. Now, however, the dog had delivered her puppies and was comfortably lying beneath the bed feeding them. When he would place his foot over the side of the bed to arise, the dog would bark but now in a happy fashion, would lick his feet. The patient felt comfortable in getting out of bed under these circumstances and felt that he had made a lasting friendship with the dog.

The patient received a total of 21 atropine treatments. The evaluation, at the time therapy was discontinued, was that the immediate results were good. The patient subsequently began leaving the hospital on visits, and his wife described him as "altogether a different person". He was calm and collected at home, spending much of his time with her, playing gin-rummy or watching T.V. He ate and slept well, getting as many as 10 to 12 hours of sleep a night. He got along well with his friends; no longer attempting to involve them in financial schemes. Through his wife's relatives, a job was obtained for him managing a group of 12 service stations in Ohio. He was declared sane by the courts in May of 1956, on his own petition.

There have been two subsequent follow-ups on this patient, both indicating that he is doing his job well and responsibly. While, occasionally, his behavior becomes somewhat hypomanic, there have been no repetitions of

the bizarre type of behavior that was previously experienced. The patient's wife reports that the patient continues to be a different person who has an excellent relationship with herself and with the community.

Summary

1) In repression, particularly of early childhood experiences, there is a blocking from awareness of instinctual drives and affective material related to the instinctual material. 2) A therapeutic plan, designed toward a release of the affective components of the repressed material, relieves pressure constantly seeking expression in the ego. 3) Atropine toxicity therapy, by altering the state of awareness and allowing for conflictual material to be expressed with abreaction of emotional content, is a method by which pressure upon the ego may be relieved. 4) The energy, now available to the ego because of the freedom from the pressure of the affective component in the repressed material, becomes available for ego functioning and can be utilized for reintegration of the personality and maintenance of adult reality relationships. 5) A case is presented which relates clinical observations to the theoretical construct.

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SYMPOSIUM ON ATROPINE TOXICITY THERAPY

Experience of Use in Private Practice

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Atropine toxicity therapy was introduced by Forrer (1, 2), and a good deal of interest has been aroused in this technique of somatic therapy. During my association with Forrer at the Ypsilanti State Hospital, I employed scopolamine as a pharmacotoxic agent in doses of 5.0 to 50.0 mg., intramuscularly in mentally ill patients, and obtained similar beneficial results. For the past two years I have used atropine sulphate in massive amounts in the treatment of private patients, using atropine instead of scopolamine because of its more ready availability. Out of this experience, I have found it advisable at times to elevate the dosage of atropine sulphate to 212 mg. since it has been found that there is a rapid development of tolerance to atropine and that the coma inducing properties of the medication are not in exact proportions to the dosages used. I have found that the use of one-quarter per cent eserine ointment, to combat mydriasis and cycloplegia, is very satisfactory.

In private practice the psychiatrist has external pressures to contend with that are not frequently met in a state hospital setting. Hospitalization is expensive, and hospitalization plans rarely carry a patient's medical expenses beyond 30 days. The need, indeed the imperativeness, to get patients out of the hospital as quickly as possible so that they may again be productive, influences what things one may do toward this end. Practical considerations have virtually dictated that I use multiple techniques of somatic therapy, often simultaneously, and this fact perhaps vitiates the validity of this report. I believe my experience does, however, rather clearly indicate that atropine toxicity therapy does have a usefulness, even within the stringent time consideration of one month to which I confined myself. In private practice the psychiatrist's efforts are more frequently devoted toward getting the patient well than to arriving at validifying scientific facts. In an attempt to avoid hospitalization in these very ill patients, Thorazine in daily dosages of 150 to 1,000 mg., orally or occasionally intramuscularly, was used. When hospitalization became necessary, dosages of 150 to 400 mg. of Thorazine were used during the hospital stay, concurrently with atropine toxicity therapy and other therapeutic measures. Thorazine was also used, in the latter dosages, when the patients were on a convalescent leave outside the hospital. Because of the high incidence of depression among these 20 patients, 19 of them received varying numbers of electroshock treatments. My indication for using atropine toxicity therapy was based upon the clinical behavior and affectivity observed in the patient. Increased psychomotor activity, particularly when associated with elation and grandiose or paranoid delusions, was the prime indicator. An increase of agitation or feelings of tension during electrotherapy were also considered by me as indications for atropine toxicity therapy.

Electroconvulsive therapy was preceded by a review of the physical status, including EKG, EEG, chest and dorsal spine X-ray, CBC, urinalysis, and serology. Atropine toxicity therapy workup included the above studies, with the exception of the spine X-ray and the addition of the icterus index as a crude test of liver function. Medical consultation was obtained when cardiac status appeared at all questionable. When atropine toxicity therapy was to be applied, patients were prepared by a brief description of the subjective experiences which could be anticipated. They were acquainted with the fact of palpitation, dryness of the mouth, urinary frequency, and the possibility of visual hallucinations. They were assured that personnel would be in constant attendance and that they should remain in

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bed until someone was there to assist them in arising. A small breakfast was given at 6 a.m., and the intramuscular injection of atropine administered into the deltoid or gluteal region at 7 a.m. The initial dosage of atropine sulphate was 32 or 48 mg.; smaller for older patients, and increased by 16 or 32 mg. increments to a maximum of 144 mg. Vital recordings, including axillary temperature, pulse and respiratory rates and blood pressure, were recorded prior to treatment. One-quarter per cent eserine ointment ophthalmic was applied to the eyes at the time of injection, every two hours during the treatment day, and subsequently three times a day on off-treatment days. Cold cream was applied to the lips to counteract the dryness which is experienced by patients being treated with this technique. Vital signs were charted every half an hour while the patient was in bed. The desired therapeutic level was obtained usually one hour following injection. At this time the patients were unresponsive to auditory stimuli, ocular movements were disassociated, and the Babinski sign was positive bilaterally. Restlessness, which sometimes occurred during the period of atropine toxicity, was controlled by the intramuscular injection of 0.25 gram of ammobarbital. Side rails were routinely used, but restraints were rarely necessary. The occasional elevation of blood pressure into the hypertensive range was reduced by the administration of 0.6 mg. of Hydergine. Axillary temperatures, elevated above 100°F., were combated by application of towels soaked in ice water and rubbing alcohol mixture, applied to large body areas. These towels were changed frequently as they became warmed. Special attention was paid to the appearance of restlessness and temperature elevation if the day was hot and humid. In my opinion, the upper limit of environmental temperature is 78 to 80°F. since febrile reactions to massive amounts of atropine sulphate seem closely related to external temperature. Six hours after the injection of atropine sulphate, the patients awoke and, while still somewhat confused, were given a serving of ice cream. I found the ice cream to be very useful. It made the patients feel more comfortable and seemed to relieve the uncomfortable subjective feelings of dryness in the mouth and throat and, occasionally, feelings of nausea. The hospital personnel encouraged the patients to eat their evening meal. Constipation, when it occurred, was treated with milk of magnesia. I.M. Dramamine was used to combat nausea, a not infrequent accompaniment of atropine toxicity therapy. Tremulousness, which was observed not infrequently the day following treatment, was combated by administering ammobarbitol grains 3 orally, twice a day as necessary. Gastric complaints were watched closely, particularly when there was a past history of peptic ulcer. I found the use of Amphojel and Probanthine quite useful. No injections of atropine sulphate were given without prior inquiry about gastric distress and certainty that no abdominal tenderness nor rigidity existed. Treatments were given, maximally, four times a week and often administered alternately with electroconvulsive therapy, and, occasionally, injections of atropine were given within one hour after completion of an electroconvulsive treatment. Intense therapeutic efforts were made, particularly in the first weeks of hospital care with a gradual reduction of the somatic therapies as the patient improved.

When no improvement or a relapse occurred during the first few weeks, somatic therapy was discontinued except for oral medication such as chlorpromazine. With the latter, the dosage was increased to 600 mg. per day with subsequent observation to determine if commitment to a state hospital would prove necessary. I must emphasize that the goal in the foregoing was to have the patient improve sufficiently to return to the home setting within a one-month period. It was my feeling that a patient who failed to respond satisfactorily with these procedures would benefit from a more leisurely convalescence than would be available to him on a private basis. It should be noted that the atropine sulphate used in this report was prepared in 1948. A recent check on the potency of the materials indicated a loss of six to eight per cent which does not materially alter the status of this report. The dosages stated are "uncorrected".

The conditions of this study on the use of atropine toxicity therapy in private practice must be fully appreciated. In contrast with the other reports in this symposium, the results I record are based on a maximum of 40

days of hospitalization. As a short-term type of somatic therapy, the results are not outstanding. I deliberately limited myself by considering patients who had been hospitalized within this arbitrary limit because I feel that it is valuable information for those contemplating its use under circumstances similar to my own. Table 1 presents the results obtained. The criteria of improvement were as follows:

Markedly improved: Essential remission of psychosis, capable of return to work, and social adjustment on pre-psychotic level within two weeks after leaving hospital.

Moderately improved: Psychotic symptoms diminished and the patient capable of returning to home setting on an improved level. Patient appearing capable of part-time employment after two to four weeks' convalescence following hospitalization.

TABLE 1

Result	No. of Patients	No. ECT	No. Atropine	No. Hospital Days
Schizophrenic Reaction—Schizo-affective Type				
Markedly improved	5	0–9 (av. 5)	1–9 (av. 6)	11–28 (av. 18)
Moderately improved	3	9–10 (av. 9)	3–5 (av. 4)	23–28 (av. 25)
Unimproved	2	0–10 (av. 5)	6 (av. 6)	19–50 (av. 35)
Schizophrenic Reaction—Acute Undifferentiated Type				
Unimproved	1	7	4	13
Schizophrenic Reaction—Paranoid Type				
Unimproved	1	7	9	36
Involutional Psychotic Reaction				
Markedly improved	2	9–10 (av. 10)	4–6 (av. 5)	19–24 (av. 22)
Moderately improved	3	7–10 (av. 8)	2–11 (av. 6)	22–27 (av. 25)
Unimproved	1	12	5	37
Manic Depressive Reaction—Depressed Type				
Unimproved	2	9–19 (av. 14)	6–12 (av. 9)	19–61 (av. 40)

Unimproved: Psychotic symptoms diminished or unchanged but patient unable to adjust to both home and work settings, or requiring commitment either on a voluntary or involuntary basis to a state hospital. Some of the details of this experience, considered by diagnostic category, follow. In the schizophrenic reactions, schizo-affective type, I treated 10 patients. Five were markedly improved, three moderately improved, and two were unimproved. One of those markedly improved received nine atropine toxicity treatments without electroconvulsive therapy. He was depressed and paranoid but not extensively delusional. In this reaction type, those patients moderately improved showed subsequent favorable progress although two required occasional out-patient electroconvulsive treatments. Of the two patients rated as unimproved, some further description is desirable. A 26-year-old, white, single, male suffered progressive increase of tension during the past five years with severe episodes of depression in recent months. He responded initially to Thorazine, 50 mg. intramuscularly, four times a day but relapsed promptly under this regime. He was administered six atropine toxicity treatments, improved, and was maintained on oral Thorazine, 400 mg. daily. He relapsed within one week of discharge and did not respond to an increase in Thorazine to 800 mg. daily. He sought voluntary admission to the state hospital, received a brief course of electroconvulsive therapy, and was home within two months capable of outside adjustment but still "jittery". The second patient, a 28-year-old housewife, had had a bilateral oophorectomy eight years previous to hospitalization. For seven years she had felt progressively depressed and withdrawn. Two years prior to admission she had had an unsuccessful ligation and section of external carotid artery for persistent unilateral headaches. Her symptoms exacerbated three months prior to admission, and she entered the hospital following a suicidal attempt by slashing her antecubital fossae. She did not respond to oral Thorazine, 400 mg. given daily for two weeks. Somatic therapy with atropine toxicity treatment and electroshock therapy produced little improvement. She did respond somewhat when her oral Thorazine

was elevated to 800 mg. daily, but two months later she entered the state hospital voluntarily with persistive depressive complaints. It should be noted that her mother has been confined continuously to the same hospital for the past 14 years, with a schizophrenic illness. There was one patient with an acute undifferentiated type of schizophrenic reaction. He was a 19-year-old, single, male, with marked homosexual trends, who developed severe depression a few months prior to admission. A week previous to admission he made an abortive suicidal attempt by the ingestion of sedatives. He became assaultive after electroconvulsive therapy was initiated but was rapidly improved after atropine toxicity therapy was begun. Hospitalization was discountinued prematurely because of the parent's poor financial condition. Thorazine was subsequently increased to 800 mg. per day, and he became more agitated. Raudixin, 400 mg. a day, plus Thorazine, 400 mg. a day, was used orally thereafter, but he showed progressive increase of depressive and paranoid thoughts a month after his discharge from the hospital. Entering a state hospital voluntarily, he was withdrawn from all medication, improved rapidly in the following few months, and was discharged.

The one patient falling into the paranoid type of schizophrenic reaction was a 26-year-old, white, housewife, mother of three children. Symptoms appeared three years previously, during her last pregnancy, ran an intermittent but progressive course until she required hospitalization the day of her initial interview. She was confused, hallucinated, expressed ideas of reference and was very negative in her attitudes toward her husband. During her first two weeks of electroconvulsive therapy and atropine toxicity therapy, she showed a favorable response but then relapsed. During the third week of hospitalization, electroconvulsive therapy and atropine toxicity therapy were discontinued, and she was committed to the state hospital where her course has not been smooth the past two months.

Of those seven patients classified as having involutional psychotic reactions, two were markedly improved, three moderately improved, and one unimproved. Those markedly improved have continued to do quite well during the three months' period following their treatment. The three patients moderately improved have had a variable course. One is maintaining himself satisfactorily after five out-patient electroconvulsive treatments. Another has continued the use of Thorazine (400 mg. per day), but her psychiatric status is marginal, and hospitalization may be required in the future. She is 58 years of age, has always had a severely compulsive personality, and was admitted following an attempt to strangle her infant grandchild. She insistently accompanies her husband wherever he goes and experiences occasional hallucinations of "hell and the devil". The third patient, a 57-year-old, white, male, had not worked for two and one-half years prior to the therapy. His father and two sisters had been state hospitalized for similar illnesses. He discontinued Thorazine three months after his course of somatic therapy because of diarrhea which developed and which proved to be refractory to all medication. Two weeks after stopping his Thorazine, his diarrhea ceased, and he suffered a relapse which was partial. The unimproved patient, a 45-year-old married woman, had never felt well after the birth of her only child 10 years previously. The preceding three years, she had displayed a progressive loss of social interest. During the six months period prior to hospitalization, she had had gastric distress, diarrhea, progressive depression, and had become increasingly inactive socially. She failed to maintain what little improvement had been shown with electroconvulsive therapy and atropine toxicity therapy, within one week after she was released. She went voluntarily to the state hospital and in the past nine weeks has steadily improved while receiving Thorazine, 50 mg. four times daily, orally, and is ready to be discharged at this time. Of the two patients suffering from manic-depressive reaction, depressed type, both were males with agitated depression of recent onset. One, a 38-year-old individual, had had a prior depressive episode and much anxiety, accompanied by the classical clinical picture. He was treated twice within five months. On both occasions he showed mild improvement that was entirely insufficient to prevent his losing his position as

an executive. He has been working part-time in a down-graded position and still despairs of getting well. He has not attempted suicide, nor has his clinical condition required commitment. He discontinued oral Thorazine because it proved of very little benefit to him. The second patient, 44 years of age, presented a very similar clinical appearance although this was his first hospitalization. He had a milder attack twelve years previously which lasted five months. Oral Thorazine, up to 600 mg. per day for one month, was ineffective, and its use following the hospital therapy detailed above was of no avail. He returned to work on a part-time basis within two months after he left the hospital but has had a painfully slow progress. Neither patient experienced any great relief with electroconvulsive therapy; they became, rather, increasingly agitated with this type of somatic therapy. Atropine toxicity therapy was of definite value by reducing this agitation, but the depressive components remained, apparently unassailable.

In summarizing the above results, I feel that atropine was beneficial to the majority of patients. There were no complications. Two patients, who went voluntarily to the state hospital, improved thereafter without further somatic therapy and without high dosage of ataraxics. The possibility of excessive dosage of the ataraxics is suggested. It must be kept in mind that in the present state of our knowledge therapeutic ambition is of no avail. Certain patients require, indeed demand, the benefits of a state hospital where there are protection and an opportunity, over a period of time, for psychic reintegration to occur. The absence of controls paralleling the patients which I have described above is lamentable, but I am sure that those of you who are engaged in private practice of general psychiatry can be empathetic with the impossibility of such a procedure.

There are healthy differences of opinion regarding the treatment of the above disorders. Kallman (3) has pointed out genetic implications in each of these illnesses. I feel that these problems involve a source of disturbance that underlies the level of the conscious or unconscious mind and influence both. Where the concept of psychodynamics is fruitful, I feel that a concept of *neurodynamics*, at present just beginning to be appreciated, will become increasingly important in the study and understanding of mental illness. Neurodynamics may be defined as the interaction of intracerebral neurophysiological forces that are essential for a healthy adjustment and are distinctly altered in the psychoses. I suggest that in some manner the somatic therapies and the ataraxics shift the neurodynamics toward the pre-psychotic state in those persons who are favorably predisposed. The coma therapies, including atropine toxicity therapy, are distinctive from electroconvulsive therapy and the ataraxics, yet each technique has a unique and oftentimes supplementary value. The criticism of empirical methodology is justified, and to some, I suppose, the pressure to get patients well is a poor apology. A great deal more needs to be done, and from what I have heard, much will be learned from the research that is being carried out at this hospital.

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SAGINAW, MICHIGAN

SYMPOSIUM ON ATROPINE TOXICITY THERAPY

Statistical Evaluation

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In 1950, Forrer (1) reported on the use of massive doses of atropine sulphate in the treatment of schizophrenia. His initial work was with a group of 16 patients, and in 1951 he reported the effects in 183 unselected cases of mentally ill individials (2). In his unselected group of patients, only 16 per cent were evaluated as markedly improved and on convalescent status. He made the observation that atropine toxicity therapy seemed "more effective in those patients who exhibited tensional states and whose ego structure was relatively intact." Criteria, for treatment, were thus broadly delineated. Subsequently, these criteria have been refined somewhat. As further experience has been gained, the dose of atropine sulphate has been increased from the 32 mg. by intramuscular injection, used in the initial studies, to approximately 200 mg. per treatment currently.

This paper reports the effect of atropine toxicity therapy on the mental status of selected patients treated at the Northville State Hospital during the years 1954 and 1955. Tranquilizing drugs were in some instances used concurrently or subsequently to atropine toxicity therapy, and the relative effectiveness of atropine toxicity alone, compared with its combination with one of the tranquilizing agents, is also reported upon. The data were analyzed by means of non-parametric statistics. Since nothing is known about the nature of the distribution of the variables in this study distribution, free methods were indicated. In evaluating the results of this statistical analysis, the 10 per cent level of confidence was chosen. This level, rather than the more stringent 5 per cent or 1 per cent level, was utilized in an effort to maximize the possibility of finding all real differences. Since this is a preliminary investigation utilizing gross measures, small, real differences are apt to go undetected. We did not want to pass up any promising leads for future research.

A selection of patients for therapy was made solely on the basis of clinically evident anxiety, tension, agitation, or hypomanic disturbances of affect. This report is based on the treatment of 104 patients. In many of them, there was evidence of flattening of affect, depression, and hostility. In all, anxiety and agitation to some degree were clinically evident. The same criteria for improvement, used by Forrer, were adhered to. A patient was considered to be worse if he was more difficult to care for and demonstrated regression of mental status. A rating of "unimproved" was given to patients who showed no significant change in behavior pattern or mental status following a course of therapy. The rating "slightly improved" was used for patients who showed three out of four of any of the following: 1) Living on a more comfortable ward, 2) more amenable to routine care, 3) carrying out an assignment or previous assignment at a higher integrative level, 4) decrease in manic behavior or hallucinations. The rating of "moderately improved" was used for patients who demonstrated all of the above, plus definite if only partial decrease of manic behavior, delusions, and hallucinations, but still requiring hospitalization. The rating "markedly improved" was assigned to those patients who fulfilled all of the above criteria, plus the ability to live outside of the hospital or who clinically demonstrated a complete remission with return to their pre-psychotic level of adjustment. In the selection of patients, no weight was given to diagnostic category nor to the length of illness. Seventy-six of 104 patients had psychotic symptoms for more than two years with the range extending to 35 years' duration. Fifteen of these 104 patients had psychotic symptoms for between one and two years' duration before therapy. Only 13 patients had psychotic symptoms for less than one year prior to the initiation of therapy. All patients proposed for atropine toxicity therapy, as well as the other somatic therapies available in the hospital,

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were presented before a somatic therapy board consisting of three to six physicians. The prognostic ratings from this conference were as follows: Prognosis was estimated as "good" in nine patients; "fair" in 35 patients, and "guarded" or "poor" in 60 patients. Since Forrer (3) had suggested that duration of illness and diagnostic category were unimportant in prgnostication with atropine toxicity therapy, we were particularly interested in evaluating this concept and observation.

The immediate post-treatment results in this group of 104 patients, tabulated according to diagnostic category, is seen in table 1. It seems fairly evident that there is no definite correlation between diagnostic category and improvement. Table 1 also reflects the effect of selection of patients for treatment. Twenty-five per cent of our series showed marked improvement in contrast to 11 per cent who showed marked improvement in Forrer's unselected series. Only 24 per cent showed no improvement in our selected cases, whereas in Forrer's report of treatment with unselected patients, 59 per cent showed no improvement.

This table was evaluated by means of chi-square. In making this computation, the data within a diagnostic category was combined, yielding a 4 x 4 table. Chi-square for this table was 14.00. This value was not significant at the 10 per cent level ($p > .20 < .10$).

Following completion of atropine toxicity therapy, 51 of 104 patients received Thorazine in doses ranging from 100 to 1,000 mg. a day. Table 2, indicates the improvement group, from which patients receiving Thorazine subse-

TABLE 1.—Diagnostic Category and Status of 104 Patients One Week after Completion of Atropine Toxicity Therapy (Selected Series, 1954–55)

Diagnosis	Cases	Unimproved		Slightly Improved		Moderately Improved		Markedly Improved	
		%	Cases	%	Cases	%	Cases	%	Cases
Psychoneurosis	11	0	(0)	9	(1)	55	(6)	36	(4)
Manic-depressive Psychosis									
Manic phase	6	0	(0)	17	(1)	50	(3)	33	(2)
Depressed phase	3	33	(1)	0	(0)	33	(1)	33	(1)
Schizophrenia									
Unclassified	35	35	(12)	20	(7)	25	(9)	20	(7)
Catatonic	1	0	(0)	100	(1)	0	(0)	0	(0)
Paranoid	30	23	(7)	23	(7)	27	(8)	27	(8)
Mixed	1	100	(1)	0	(0)	0	(0)	0	(0)
Schizo-affective	10	20	(2)	20	(2)	20	(2)	40	(4)
Psychosis									
All other	7	29	(2)	14	(1)	57	(4)	0	(0)
All diagnoses	104	24	(25)	19	(20)	32	(33)	25	(26)
Unselected cases, 1951	155	60	(93)	20	(31)	8	(12)	12	(18)

TABLE 2.—Comparative Status of Patients Treated by Atropine Toxicity Therapy with and without the Addition of Thorazine

Time after Completion of Atropine Therapy	Improvement							
	None		Slight		Moderate		Improved	
	%	Cases	%	Cases	%	Cases	%	Cases
1 Week—(Thorazine)	22	(11)	35	(18)	29	(15)	14	(7)
1 Week—(No Thorazine)	23	(10)	14	(6)	25	(11)	38	(17)
6 Months—(Thorazine)	33	(17)	12	(6)	10	(5)	45	(23)
6 Months—(No Thorazine)	26	(12)	10	(4)	14	(6)	50	(22)

quent to atropine toxicity were drawn. It is evident that there was a trend to give Thorazine to patients who fell into either the "unimproved", "slightly improved" or "moderately improved" groups to a greater extent than to patients who were markedly improved with atropine toxicity therapy.

Two separate chi-squares were computed for this table. The first compared the one-week status of the 51 patients receiving Thorazine to the one-week status of the 44 patients who received no Thorazine. Chi-square = 10.19. This was significant beyond the 10 per cent level ($p = > .02 < .01$). The same comparison was made for six-month status. In this instance chi-square = 1.13, which is not significant at the designated confidence level ($p = > .80 < .70$).

This finding suggests that those patients who had not responded favorably with atropine were then administered Thorazine. With Thorazine, these patients then improved sufficiently so that, six months post-treatment, they were not statistically distinguishable from the patients not administered Thorazine post-treatment.

Following completion of atropine toxicity therapy, 51 of 104 patients received Thorazine in doses ranging from 100 to 1,000 gm. a day. Table 2 compares the status one week after completion of atropine toxicity and the six-month status of patients receiving atropine toxicity therapy alone, with those who had, in addition, Thorazine subsequent to their somatic therapy. It seems evident that there was a trend to give Thorazine to patients who fell into either the "unimproved", "slightly improved", or "moderately improved" to a greater extent than to patients who were markedly improved with atropine toxicity therapy one week after completion of treatment. The six-month figure seems significant and indicates that after a six-month period patients receiving Thorazine subsequent to atropine toxicity therapy showed no appreciable statistical differences in improvement than patients who had been treated with atropine toxicity alone. The tables also indicate that Thorazine after atropine toxicity therapy is decidedly beneficial. However, the total additional effect of Thorazine to the atropine therapy does not go beyond the percentage of marked improvement of those receiving atropine toxicity therapy alone, six months after the termination of that therapy. Thirteen of 104 patients received electroshock therapy following their atropine toxicity therapy. Six of these patients recovered or were markedly improved. This improvement was produced in patients with depressive affect. This seems to confirm earlier findings that atropine toxicity therapy was of little benefit in depressive psychotic reactions.

Six months after the termination of atropine toxicity therapy, 52 of 104 patients (or 50 per cent) were on convalescent status. Of these 52 patients, 49 were markedly improved when judged by the aforementioned criteria. The criteria for selection of patients for therapy seem to be validated in table 3. Fifty per cent of selected patients were on convalescent status compared to 17 per cent of Forrer's unselected series. Moderate improvement in 11 per cent of patients in this series compared favorably with five per cent of moderate improvement in an unselected series of patients. Only 31 per cent of patients showed no improvement, in contrast to 61 per cent who showed no improvement when selection criteria were not adhered to. Using the criteria for selection, as related above, three times as many patients were on convalescent status six months after termination of therapy than when no selective criteria had been applied. In this table also, one can observe the apparent lack of significance of diagnostic category. To compute chi-square on this table as in table 1, all break-downs within a diagnostic category were combined, yielding a 4 x 4 table. The chi-square = 9.24, which is not significant ($p > .50 < .30$).

In table 4, those patients having psychotic symptoms for less than one year show a 56 per cent markedly improved rate; those having psychotic symptoms from one to two years show a 40 per cent markedly improved rate; and those having psychotic symptoms for between two and 15 years or more show 47 per cent marked improvement. The over-all markedly improved rate being 48 per cent. The chi-square for this table was 1.98. This is not significant at the 10 per cent level ($p = > .95 < .90$). This confirms Forrer's observation that duration of psychotic symptoms was of insignificant importance in prognosticating the effects of atropine toxicity therapy.

TABLE 3.—Status of 104 Patients Receiving Atropine Toxicity Therapy, 6 Months after Cessation of Therapy

Diagnosis	No. of Cases	Unimproved		Slightly Improved		Moderately Improved		Markedly Improved*	
		%	Cases	%	Cases	%	Cases	%	Cases
Psychoneurosis	11	36	(4)	18	(2)	18	(2)	28	(3)
Manic-depressive									
Manic phase	6	0	(0)	0	(0)	0	(0)	100	(6)
Depressive phase	3	33	(1)	0	(0)	67	(2)	0	(0)
Schizophrenia									
Unclassified	35	23	(8)	9	(3)	17	(6)	51	(18)
Catatonic	1	0	(0)	9	(0)	0	(0)	100	(1)
Paranoid	30	40	(12)	14	(4)	3	(1)	43	(13)
Mixed	1	100	(1)	0	(0)	0	(0)	0	(0)
Schizo-affective	10	30	(3)	10	(1)	0	(0)	60	(6)
All other psychosis	7	42	(3)	14	(1)	14	(1)	30	(2)
Totals	104	31	(61)	10	(15)	11	(5)	48	(19)

* 50% (52 patients) on convalescent status.

TABLE 4.—Length of Psychotic Symptoms Prior to Atropine Toxicity Therapy and Status 6 Months after Therapy

Length of Illness	No. of Cases	Unimproved		Slightly Improved		Moderately Improved		Markedly Improved	
		%	Cases	%	Cases	%	Cases	%	Cases
Less than 1 year	13	30	(4)	7	(1)	7	(1)	56	(7)
1 to 2 years	15	40	(6)	13	(2)	7	(1)	40	(6)
2 years +	76	29	(22)	11	(8)	13	(10)	47	(36)
All cases	104	31	(32)	10	(11)	11	(12)	48	(49)

To study the relationship between physicians' prognosis, results of atropine toxicity therapy, and affective status, table 5 was prepared. The 104 patients were divided into two groups. Into one group were placed those patients who gave clinical evidence of anxiety tension, agitation, and guilt; and into the other group were placed those who gave clinical evidence of flattening of affect, depression, and hostility. It can be clearly seen from this table that the 42 patients who were clinically tense, anxious, and agitated showed 74 per cent marked improvement, whereas of the 62 patients who were clinically depressed, hostile, and showed flattened affect, only 32 per cent were markedly improved following therapy. The moderate improvement, percentage-wise, was the same in both groups. Of even greater significance, however, is the fact that only 14 per cent of the anxious and tense group showed no improvement or only slight improvement, whereas 59 per cent of the flat, depressed, and hostile group, showed little or no improvement. Of the latter, 10 of 11 patients, considered both "flat" and "hostile", showed no change subsequent to atropine toxicity therapy. This suggests that patients so evaluated clinically cannot be expected to benefit from this technique of somatic therapy.

This table was analyzed in two ways. First, an over-all chi-square was computed on the 2 x 4 table, which resulted when all the patients in the anxious group were combined, as well as all the patients in the "flat" group. This chi-square was 22.18, which is significant beyond the 10 per cent level ($p > .001$.)

Secondly, chi-square was computed for the three classes of anxious patients and the three

TABLE 5.—Status of 104 Patients 6 Months after Atropine Toxicity Therapy, Compared to Affect Prior to Treatment

Type of Predominant Affect	No. of Cases	Unimproved		Improved					
				Slightly		Moderately		Markedly	
		%	Cases	%	Cases	%	Cases	%	Cases
Anxious	22	14	(3)	4	(1)	10	(2)	72	(16)
Tense	10	10	(1)	0	(0)	20	(2)	70	(7)
Agitated with guilt	10	10	(1)	0	(0)	10	(1)	80	(8)
Total	42	12	(5)	2	(1)	12	(5)	74	(31)
Flat	27	41	(11)	14	(4)	14	(4)	31	(8)
Depressed	24	29	(7)	25	(6)	9	(2)	37	(9)
Flat and hostile	11	91	(10)	0	(0)	0	(0)	9	(1)
Total	62	43	(28)	16	(10)	9	(6)	32	(18)
All cases	104	31	(33)	10	(11)	11	(11)	48	(49)

TABLE 6.—Prognosis as Stated before Atropine Therapy and Status of Patient 6 Months after Termination of Therapy

Prognostic Statement	Status of Patient			
	Unimproved	Somewhat improved	Markedly improved	Total
Good	2	0	7	9
Fair	10	6	19	35
Poor	20	15	25	60
Totals	32	21	51	104

classes of flat patients. The chi-square for the anxious patients was 3.59, which is not significant ($p > .30 < .20$). For the flat patients, chi-square = 10.48, which is significant ($p > .02 < .01$). This significant chi-square seems due to the fact that of 11 patients considered both flat and hostile, 10 were unchanged.

Table 6 shows the relationship between the prognostic estimates assigned by the Somatic Therapy Conference and the ultimate results of atropine toxicity therapy in these 104 patients. Of the nine patients who were thought to have a good prognosis, 78 showed marked improvement and 22 per cent were unimproved. Of the 60 cases whose prognosis was rated as poor or guarded, only 42 per cent showed marked improvement, 15 per cent moderate improvement, 10 per cent slight improvement, and 33 per cent no improvement.

To statistically analyze this table, it was necessary to combine the two middle classes of improvement into one. This yielded a 3 x 3 table. Kendall's Tau, a rank order correlation coefficient, was then computed, and the resultant value was .07. This is not significant ($p = .36$), suggesting that the psychiatrists' ratings are of no predictive value insofar as the outcome of atropine treatment is concerned.

Certain conclusions seemed warranted on the basis of this study. First, the length of illness has little significant influence on the effectiveness of atropine toxicity therapy. Secondly, the most important criteria in the selection of atropine toxicity patients are the presence of anxiety, tenseness, and agitation. Thirdly, Thorazine administered to patients having received atropine toxicity therapy is beneficial. However, the total improvements with Thorazine do not exceed the percentage of marked improvement with atropine alone after six months. Fourthly, electroshock therapy appears to be far superior to atropine toxicity therapy in the treatment of depressive illnesses. Fifthly, the diagnostic category has no important influence on the outcome of atropine toxicity therapy.

In discussing the above, it seems evident that the marked efficacy of atropine toxicity therapy in manic psychotic reaction is due not so much to the diagnostic category, as Forrer

implied, but is rather related to the agitated, tense, quality of the affect in this particular psychotic reaction. It is probably significant that the reports on Thorazine indicate that behavioral or affective components in the patient's makeup are more important in prognosticating the effects of this drug than are either diagnostic categories or duration of illness.

Although inspection of the figures would seem to indicate that prognosis can be accurately judged on the basis of clinical status, this impression is not borne out when the data are subjected to statistical analysis. It seems clearly indicated that much needs to be done to more adequately clarify the criteria for therapy so that we may have precise and accurate measures of prognostication. Grisell's paper (4) seems to indicate that psychological tests of anxiety level and ego strength are more accurate, prognostically, than the psychiatrists' clinical evaluation.

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THE MAN WHO WAS MARRIED 55 TIMES

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Mr. X had many aliases. According to records of the Federal Bureau of Investigation and police officials he had been married at least 36 times. A book found in his possession when he was apprehended by the police indicated that he had been married 55 times. His own statements and what was represented as a deathbed confession tended to support the figure of 55. He died in 1955, en route from his hotel to a hospital, after a cardiac seizure of undetermined nature.

Report of Psychiatric Interview

The subject was a pleasant, well-groomed, highly intelligent, dapper, 52-year-old man of French descent who wore imported, custom-made suits, Sulka shirts with 6-inch cuffs and gold-nugget cuff links, white Homburg hats and square, gold-rimmed glasses. He drove a black limousine with a gold roof and wine-colored upholstery. His voice was soft, unassuming and cultured; his eyes alert and twinkling. Throughout his 25-year career he had made $700,000 to $800,000. He had traveled throughout the world, and lived at the most exclusive hotels and clubs in this country and abroad. Except for 4 years which he spent in a federal penal institution, he managed to escape difficulties with the law, and in some respects was even regarded as a respectable citizen.

It was a former wife's complaint and an alert restaurant-man's eye that caught sight of the white Homburg that Mr. X refused to check which finally combined to lead to his conviction for swindling.

As far as could be determined, Mr. X always had enjoyed excellent physical health. The possibility that his history might shed some light on the genesis of such behavior as the contracting of multiple marriages and the fact that the literature contains no reports of behavior quite like his prompted publication of this psychiatric history and comment.

After stating that he was about to undergo his first psychiatric examination and that he had refused such studies while in prison, "lest it be spread around," the subject began with his marital history. He said he was first married when he was 17 and his wife was 16. When describing these 4 years of marriage he discussed chiefly his mother-in-law, who "supplied the money, lived with us, and did a man's work." When the mother-in-law's money ran out and the subject refused to work, his wife divorced him and took their two daughters with her. He never saw or heard from this wife again.

The second marriage, which took place when the subject was 21 years old, was to a wealthy 54-year-old woman who "had lots of money and bought me clothes." He said "her friends thought it wasn't wise; they kidded me about mother and son. She always scolded and humiliated me in the presence of her friends. I was furious, but never fought back." He said that this wife was always jealous and finally had private detectives watch him while he was going out with young girls. Despite this woman's high social status and refinement, "she used foul language and insisted I did something wrong, was in prison, or was being evasive about my girl friends." After a world tour and sexual relationships with this woman's three friends, the subject absconded with $6,000 deposited in his name by his wife for the purpose of setting up a business and giving Mr. X "a manly sense of independence."

After he had deserted his second wife without benefit of divorce, Mr. X married for the third time, and he felt he could discern a career-of-marriages pattern. In essence, the subject's conception of himself was as an "immaculately clean, alert young man falling prey to an older, more experienced woman. They liked to mother me and they liked sex. I took the lead and was very rarely rebuffed." As with his previous wife, the usual extramarital affairs, investigations by private detectives and tacit permission for sexual acting-out followed in quick order and culminated with Mr. X's absconding with whatever money was available.

"Every woman I left, I felt wrong about." He explained his technic as follows: "I noticed women and men. The one who did all the talking was crude. I listened and let them talk. They would ask the questions, but I never asked about them. I had youth, good clothes and was a good dancer. Having the finest clothes is the first thing women look at. One woman said: 'Size a man up by first looking at his hat, then his tie and shoes.' I was particularly interested in attracting women with my hat. Every time I met a woman I lied to her. I always stopped at a resident hotel where there was dining, dancing and bridge. Never at a bar. I was a gentleman and attentive. After getting to know a woman I would say what a nice wife she would make. How grand it would be, but that I was no man of money and couldn't keep them in the atmosphere they were interested in. I'd say my family was very religious; I wanted to get away. I'd tell them I was a mining engineer from Alaska and that my only relative was a brother in China who was a missionary. Then we had intercourse. I preferred the French way. I only had natural intercourse with four of 55 wives. I was always married to women past 40 and one was 68. They were always widows or divorcees. Sometimes I didn't marry but got $5,000 to $6,000 in advance. Among my wives were four hairdressers and several prominent people. I always won my point after sexual relations. I never had any feeling for women . . . it was never really love; it was an infatuation. Things happened so fast . . . I'd say to them 'What a nice wife you'd make, but what would your children say, marry-

ing a man 15 to 20 years younger? . . . let's keep it a secret and surprise them.' "

All the marriages were performed by justices of the peace, and Mr. X was always careful to escape detection. In later years, when marriage was a "refined business", it would never last more than a week. At the peak "I married 4 to 5 times a year for 13 years." Mr. X lived with only one wife at a time, and throughout his career he met a former wife only once: "Her friends thought I had gone into war on a special, secret assignment . . . that I died. I told her a sad story and she gave me $10,000 more."

However, after his newspaper notoriety and imprisonment, Mr. X said he received 14 annulment papers and, rather surprisingly, countless letters from ex-wives who said, "thanks for keeping still . . . it would just ruin my life."

Although Mr. X spoke with felicity about his many marriages and newspaper publicity, he frequently flushed or choked up when describing matters of close interpersonal significance. About his mother the subject said, "She was 14 years older than I; always a very attractive woman that all men liked. She was a neat dresser who could wear anything and look good in it; like Adolph Menjou."

His first memory about his mother was at the age of 6 years when "she tied me to a tree for several hours for flying a kite after she told me not to." His mother was married at the age of 13 years, and his father, 23. "I always thought it was legitimate." His maternal grandmother, who lived a mile away, was his favorite. "She often handled the punishment . . . always threatened . . . would just look at you and you'd know it. She'd say the police and gypsies were coming to pick us up. Mother was the oldest of many daughters and a brother." About his maternal grandfather the subject merely said that "he was a hard worker who got along well."

In contrast to the anger and openly professed hatred of his mother, Mr. X was quite subdued in manner when he discussed his father. He said his father had been drunk when he was killed by a train on Christmas Eve. The subject was then 6 years old. "He had our presents then. He had a violin for me. Later I wanted to be a violinist. I remember playing it. A week after Christmas mother broke the violin up. Today I'm a lover of the classics, finest music, concerts and opera. That's where I met many of my wives."

The first memory of his father was "how enthused I was when he brought the violin; how he played with us kids." The rest of the comment about his father was limited to a physical description as "a handsome man with coal-black, wavy hair . . . I resemble him." Mr. X asserted that his mother kept the memory of his father alive by frequently reminding the children of "what a drunkard he was." Mr. X could only remember that his mother nagged his father. About the death of the father the mother said: "He's in a nice place . . . I hope he stays there." Nothing else was said.

About the paternal grandmother the subject said she was very religious and attended mass every day. Although she lived to be 100 years old, she never found time for, or took an interest in, Mr. X. "She was upset because I couldn't say my prayers. She said that mother was a worldly woman." The paternal grandfather was characterized as a "quiet, gray-haired, kindly old man, who sat around and played cards."

Mr. X was the oldest of six siblings. One year younger than Mr. X was his brother, André. When describing André, the subject frequently choked up and had tears in his eyes. He said that André had spent most of his life in prison for a holdup because his mother had refused to attend the trial and to help him. "She merely said 'The hell with it!' " However, despite assailing his mother's refusal ever to visit or communicate with André, the subject paradoxically admitted that he had never visited or written to him, either. "All she [mother] thought of was men. That was the sore spot of my life [meaning André's imprisonment]. I have nothing but hate for this man, Carl [mother's paramour]." When describing his brother André, Mr. X associated to his mother's brother, André, after whom his own brother was named. "He was insane and always in hard circumstances. Mother would lock the door and have me tell him she wasn't home. All he wanted was food. She would say that he was a drunkard. Grandmother was ashamed of him, and mother's sisters ridiculed him."

The subject had a sister who died at the age of 4 years, of smallpox: "All I remember is that I had a sister; her death was never discussed." His brother, Larry, died at 6 years when Mr. X was 10. "I remember the nuns' coming to tell me about it at the orphan home; otherwise it was never mentioned by anyone." Two other brothers, 5 and 6 years younger, respectively, apparently were in good favor with the mother, and subsequently married and had children. Later, both brothers worked for Carl, the mother's paramour. In his childhood the subject and his three older brothers shared twin beds in one room while the baby stayed with his mother.

The education of Mr. X and his brother, André, included frequent episodes of truancy, followed by abandonment of schooling after the third grade. "It was easy to talk mother into the idea; she could use the money we earned." The mother meted out the punishment, which consisted of beatings with a yardstick, often without reason, putting soap into the children's mouths and periods of enforced silence. "She had us lie to Carl [the paramour] when the cop [another paramour] was visiting her. The cop used to beat us, and mother never stopped the beatings."

Since lying seemed an important aspect of Mr. X's life, he was asked about "the first lie". He said that as an altar boy he had drunk the communion wine, and that the priest had questioned him about it. Because he denied this act, the priest put his hand on a hot stove. At this point Mr. X showed extensive scars on the dorsum of his right hand.

Many of the subject's early years pivoted about his feelings toward his mother's paramour. "I could see things . . . making love in front of me . . . they locked me in the room and I knew. He was a married man, yet he went with mother for 40 years. Finally he married her . . . after a short while he died. Not knowing of this I 'phoned mother and asked where Carl was. She said 'He's all right; he's out at Fair Lawn [Cemetery]'."

On one occasion, when Mr. X was 15 years old, he

told the wife of his mother's paramour about the affair: "Yet she, being religious, wouldn't believe me. Carl convinced her that mother was merely his secretary."

In his later adolescence, when Mr. X was in a training school for "overdrawing a check for 50 cents", the mother and the two youngest boys moved into a fine house in a substantial neighborhood. The necessary arrangements and finances were provided by Carl, the paramour. When Mr. X returned from the training school, he and his brother, André, sometimes were forced to go to the city dumps for food; otherwise his diet often consisted of stale bread with lard and salt and pepper, while his two younger brothers were well cared for by a hired maid. It was at this time that the mother's sister, Grace, went to live with the family. "She liked a lot of fun until her first child. She then developed arthritis and her husband left her. Then some wealthy man left her $10,000 to send her son to college. I tried to get near to her but nothing happened."

The subject of sex within the family was strictly forbidden, and the subject described his home as Victorian in that regard. However, many lacunae were readily discernible. For instance: "We saw mother breast-feeding the other children. I was bashful. She'd want to feed me. They [other children] always tantalized me on that ... 'Come [X], it's time for breakfast'."

Mr. X said he never could remember being aware of the fact that his mother was pregnant. He said his grandmother and mother never bathed him or the other siblings. There was never any show of affection with the children, such as kissing, hugging or playing. Most of the doors in the house were always locked. The motif of cleanliness, so prominent in Mr. X's personal fastidiousness and in his choice of spouses, was well illustrated in his comment: "There are certain women I can't stand: those that don't take frequent baths and have hair under their arms." This attitude might well have been a reaction formation to the dirt of his childhood. About himself he added: "I have never abused my body; I take daily baths and get plenty of sleep. I use alcohol only occasionally, and smoke one package of cigarettes a day."

When asked about his own sexual attitude, Mr. X said: "I learned the facts of life at public school from my friends. Later [age 13] I was playing around with a little girl and had an erection. Her name was Lucille, and I named my first daughter that." The patient saw no connection between the early experience and the later use of the name. Although he seldom visited his two daughters by his first wife, he maintained contact with them throughout the years and took great pleasure in buying fancy clothes for them.

Mr. X's adult sexual practices were patterned on "the French way" (fellatio and cunnilinction). He said he had learned these practices from his third wife, who was homosexual. He had little more to say about this wife when questioned, but remarked that of the 55 wives, only two would not respond (to fellatio and cunnilinction). "They'd say they never did it that way, but I could teach them. They didn't rebel."

Although Mr. X would not give a direct answer when questioned about his potency, he said he "gave up normal intercourse after the third wife, because I had to change; I was too passionate." At least three times during the interview the subject voluntarily explained the "French way". When asked about any dreams he had, he said: "I have beautiful wet dreams." He could not expand on this subject.

The only spontaneous comments of the subject about homosexuality concerned the third wife and her paramours. Mr. X was rather defensive about this topic, and changed the subject whenever it was brought up obliquely. Reflecting upon such practices in the prison in which he had been confined, he said, "I heard of things going on there, but nothing like that ever happened to me."

While discussing his imprisonment, Mr. X suddenly demonstrated his trick shoe heel, with a secret compartment in which he carried douche material as an aid to women. About prison he continued: "It took the cockiness out of me, and stopped room service and breakfast's being brought to me. I learned how to get along with my fellow inmates. I wanted a rest and good food, so I bought my way into the hospital ward and got insulin shots. I really just got in to play bridge. The psychiatrist asked to see me on several occasions, but I refused. I often dreamed I was going to die."

Toward the end of the interview, when Mr. X was describing his accomplishments with women, he became cheerful and confident. He insisted on displaying his custom-made clothes, and he also produced a huge collection of letters purportedly seeking advice on love and marriage. He dilated on his plans for the future and his general philosophy of life. He said that Leopold Stokowski was his ideal, and that some personalities who strongly appealed to him were Lily Pons, Dorothy Kirsten, Robert Browning and Madame Curie. He said that since so much publicity had been accorded him, either men were jealous of him or they would want to shake his hand and say, "How'd you do it [Mr. X]?"

At the conclusion Mr. X asked the examiner if he would be willing to meet Wife No. 56-to-Be: a very wealthy elderly woman in the process of obtaining a divorce. He said he was in love with this woman, and that it was now "marriage for keeps." He said it was this woman who was responsible for the interview, and that she carried on the necessary correspondence preliminary to the examination. "She knows about me ... how I've been condemned, but it doesn't matter. Her husband is 30 years older than she is ... she's just a very gracious mother."

Comment

Although many reservations are in order when discussing a patient who was seen only once in psychiatric interview, perhaps the unusual nature of the material and the fact that such people as Mr. X seldom seek psychiatric help, yet pose problems in our society, will justify some speculation about the psychodynamics of his swindling career of multiple marriages. On the periphery is an almost Don Juan-like hypersexual acting-out (1), with an apparent lack of anxiety or guilt. On the

next stratification is the intense confusion concerning sexual identification.

The oedipal problem which was most overt in his case was centered on an openly seductive, tantalizing mother, who could also be cold, brutal and sadistic. At this critical period he lost in quick succession his father, a younger sister and a brother; and his youngest brother was born. It was also at this time that his mother teasingly offered him her breast while she nursed the new baby. Shortly after this period, his mother, who was only 13 years older than he ("it was legitimate"), started a series of affairs with various paramours. During her meetings with the paramours his mother locked him in an adjacent room where he could hear what was going on. His mother also expressed her cruelty in other ways, such as by tying him to a tree, putting soap in his mouth or having her policeman paramour beat him in her presence. Although Mr. X was the favorite of his maternal grandmother, his only association to her was the punishment she gave him. The paternal grandmother lived to be 100 years old, yet she took little interest in him, other than reminding him to say his prayers and telling him "what a worldly woman your mother is." The only other early contact with women was with Aunt Grace, whom he dismissed with the rather cryptic remark: "I tried to get close to her, but nothing happened."

The swindling aspects of his career might be connected with his early experiences with lying. He was an agent for his mother and maternal grandmother in their unkind attitude toward his "insane uncle André." For instance, at his mother's bidding, Mr. X had to refuse André food by shouting through a locked door that his mother was not at home. In addition to the permission for lying that he received from his mother, the memory of his first lie might have suggested his later attitude toward regligion or the law in relation to his swindling career. He might have reasoned that, since he had lied about drinking the communion wine and had had his hand burned as a punishment, he ought to have been more clever, so as to escape detection, rather than to desist from such activity. Possibly related to this experience and his maternal grandmother's attitude concerning prayers was his later use of "religion" as part of his seducing technic in which he asserted he was from a religious family, or that he had a brother who was a missionary in China.

The hostile, erotic tinge of his swindling is strongly suggested by the fact that lies constituted the acceptable procedure unless he wished to suffer punishment by his mother. For instance, in his childhood, he had to lie to one paramour by telling him that his mother was not home, when she actually was occupied with a different paramour. Whereas, on other occasions when he did not lie or when there was no apparent provocation, his mother had him beaten by her policeman paramour. Even when Mr. X sought out the wife of Carl (the paramour) to tell her of Carl's affair with his mother, the wife of Carl preferred to believe that Mr. X's mother was really Carl's secretary. This willingness to be duped and the experience of similar disappointments in female justice, such as his mother's failure to help his brother, André, who subsequently was sentenced to imprisonment for life because of a holdup, might have fostered in the subject the development of an uncanny cleverness designed to avoid detection by the law or, perhaps more significantly, abandonment by his mother.

On the basis of these events Mr. X learned that crime does not necessarily not pay, and that in his career he had found a way of life consistent with his early experiences as well as a form of revenge. It is seen that Mr. X was proficient in lying for his mother when she was with her paramours. It developed that he seemingly had little difficulty in later life in convincing gullible women, who wished-to-believe yet found themselves carrying out or submitting to acts to which they were unaccustomed, such as fellatio and cunnilinction, hiring private detectives to spy on him and his girl friends, using foul language and finally finding themselves swindled out of large sums of money and being deserted.

In addition to his ambivalence and hostile dependency on his youthful mother, there were deficiencies in masculine identification with his alcoholic father which also provided fertile ground for his career. The early and violent death of his rather passive and ineffectual father gave further impetus to his oedipal

problems. At that time he was 6 years old. His mother kept the memory of the father alive by frequently reminding her children of "what a drunkard your father was." What little he had to say about his grandfathers was, superficially considered, inconsequential or suggestive of their essentially passive natures. It would seem that to acquire "a manly sense of independence," such as he attempted with his second wife, also would have implied some grave dangers, if indeed it was possible at all.

Mr. X apparently never had any male friends. He demonstrated an attitude of passive longing toward the physician when the physician showed a sympathetic interest in his problems; and he had an almost martyrlike concern when he was describing the misfortunes of his father and his brother, André. Although a self-possessed expert on sexuality as it related to his countless seductions, he was comparatively reticent and defensive when discussing homosexuality among men. He could talk endlessly about his relationships with women, yet he had little to say about men. The facts of his life suggest that he never really competed with men. When in prison he managed to get into the hospital ward, and he apparently was able to get along with his fellow inmates, but he made no friends. After he was released from prison, and much publicity had been given to his career, Mr. X's attitude toward men was that they were either jealous of him or wanted to know how he brought off such successes as came to him.

The oedipal anlage of seducer and seduced, seemingly was the main motif of this subject's life. His action in seeking revenge on his mother by means of the exercise of erotized hostility toward women 15 to 20 years older than himself, without apparent anxiety or guilt, might be traced in part to his mother's permissiveness in sexual acting-out as well as lying, but this does not explain his apparent lack of anxiety or guilt. That this lack of anxiety or guilt might have been spurious or well guarded with defenses in the sense that his sexual life consisted almost solely of indulgence in fellatio and cunnilinction might be inferred from his "wet dreams" and his contention that he was "too passionate" for normal intercourse (1). Although he did not say that he was impotent, the suspicion that he was should be entertained. It would seem that in this case to be potent or a complete man might have been a dangerous responsibility capable of mobilizing much anxiety.

Beneath Mr. X's façade of hypersexuality was an intense confusion concerning sexual identification. For instance, he described his mother as looking like Adolph Menjou, and his choice of ideals was centered on rather feminine objects. Another example might be found in a double meaning in his statement that he was susceptible to "falling prey to an older, more experienced woman."

Possibly more basic than Mr. X's problem of sexual identity was his dependency, as illustrated in his constant seeking of approval or reassurance during the interview. Despite his avowed hatred of his mother, he did manage to know of her whereabouts throughout the years, and despite repeated rebuffs he continued to telephone her. His preoccupation with his body, as illustrated in his fastidious personal grooming and the motif of cleanliness so important in his choice of wives, as well as his apparent enjoyment of publicity, might have been one way of attracting attention to himself, and in turn generating some interest, even at the cost of being regarded as a sort of freak.

As long as Mr. X had his defenses of sexual acting-out and swindling, and did not have to contend with a threatening titer of anxiety, he probably remained free of symptoms. As long as he could find highly susceptible women who would seek his ministrations and possibly masochistically give vent to their own unconscious hatreds, it is probable that his career, had not death intervened, would have continued along the path laid down by his celebrated predecessor, Don Juan.

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MORAL TREATMENT IN AMERICAN PSYCHIATRY

J. SANBOURNE BOCKOVEN

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V. Hospital Statistics and Prognosis of Mental Illness

1

"Figures don't lie but liars can figure" is a common quotation which aptly expresses an almost universal distrust of statistics. Skepticism mounts even higher when historical statistics are used to support a point of view. Data from historically remote sources can always be said to lack comparability with modern data whatever the subject matter. These difficulties become manifold when one is dealing with recovery and discharge rates from mental hospitals. Comparability of clinical material one hundred years ago and today is not easy to achieve. It is also difficult to achieve comparability between two contemporary hospitals. In neither case can we afford to ignore the quantitative data which are *available*.

Any effort to do a historical statistical study of mental illness is uniquely blessed by the fact that even the most ancient of our mental hospitals were required to submit annual reports to the state legislature. The Annual Reports of the Worcester State Hospital beginning in 1833 contain a wealth of statistical data in an unbroken series to the present time. They provide us with a panoramic view of the traffic of patients in and out of the hospital for over one hundred years. Figure 3 shows what happened to the recovery rate over that period, a drop from 45% to 4%: the cry can be made that the criteria for recovery became more stringent. And indeed they did. There is also undeniable evidence that standards of treatment declined to a very low level.

The decrease in recovery rates in the post-Civil War period from the level of the early decades of the nineteenth century is by no means a new finding. Attempts to explain the decrease led to one of the most heated controversies in the history of psychiatry, namely, that concerning the curability of insanity. The pessimistic view bluntly thrust on the medical world in the 1870's by Dr. Pliny Earle's statistical studies showing lower recovery rates than those reported in the past was followed by implications that the statistics of the earlier period had been "cooked". Since Dr. Earle wielded considerable influence and was greatly respected, other superintendents followed his lead. Among them were superintendents of the Worcester State Hospital, first Dr. Barnard Eastman and then Dr. John Park who followed him. Stimulated by Dr. Earle's suggestions they compiled a retroactive report of all admissions and discharges from the day the hospital's doors were opened by Dr. Woodward. They employed their own criteria of recovery and did not distinguish between patients ill for less than one year and those ill for a longer period. The recovery rates shown in figure 3 were derived from Dr. Park's table covering the years from 1832 to 1892. When it is remembered that Dr. Park looked on Dr. Woodward's recovery rates with a jaundiced eye and that one of his objectives in doing the study was to demonstrate that Dr. Woodward had exaggerated his recovery rates by juggling his figures, there is little reason to suggest that the number of recoveries was exaggerated. The results of the study, however, with respect to the years when Dr. Woodward was superintendent did not differ more than two or three per cent from Dr. Woodward's own figures. This was never commented on

by Dr. Eastman, Dr. Park or Dr. Earle in the Annual Reports of the Worcester State Hospital or elsewhere. Not that they failed to be impressed, however, for Dr. Park set to work on a follow-up study (which took 10 years to complete!) of all patients discharged as recovered in the records of the Woodward regime. It amounted to a follow-up of more than 1,000 patients over a 60-year period.

2

Follow-up studies of patients discharged from mental hospitals have rarely been made for a longer period than 20 years after time of discharge. Such studies as have been made seldom deal with more than one or two hundred patients. A follow-up study covering a period of 36 to 60 years after discharge involving over a thousand patients is therefore of considerable interest. Evidence that these patients were discharged from the Worcester State Hospital during the years 1833 to 1846 not only adds to the interest, but also provides a unique opportunity to learn about the treatment results of early American psychiatry.

The study in question was carried out between 1881 and 1892. We have inferred that the patients dealt with were discharged prior to 1847 since the total number of patients followed (1,173) is within 15 of the total number of patients reported discharged as recovered during the years 1833–1846 (1,188). This was also the period when Dr. Woodward was head of the hospital. In view of Dr. Pliny Earle's attack on Dr. Woodward's reports of recovery, it is not inconceivable that Dr. Earle suggested the followup study of Dr. Woodward's recovered patients in order to prove his point that the majority relapsed. Mention of this study was first made by Dr. John G. Park, superintendent, in the 49th Annual Report of the Worcester State Hospital, 1881. The following quotation from this report discloses that his purpose was to demonstrate the unlikelihood of recovery.

". . . A review of insane hospital statistics upon this subject of recoveries, as tabulated in the annual reports of the institutions, has brought of late to public notice the fact that a person afflicted with insanity is quite liable to a second and subsequent attacks, and that a relapse, or an attack *de novo*, occurs in this malady more frequently than in any of the other serious forms of disease.

"Now, although it may be a question upon which there may be honest differences of opinion whether each case which recovers may not be fairly called a cure, even if the patient has a second attack within a few months or a year, there can be no doubt that the public have been hitherto widely misled as to the meaning of the word 'recovery', as used in the hospital reports, and as to the permanency of cures from insanity. Not a small number of patients who were discharged recovered in the earlier reports of this hospital have many times since become a burden to the public or private purse by reason of a return of their malady.

"In order to obtain definite information on this point the following circular has been prepared, making inquiry about the subse-

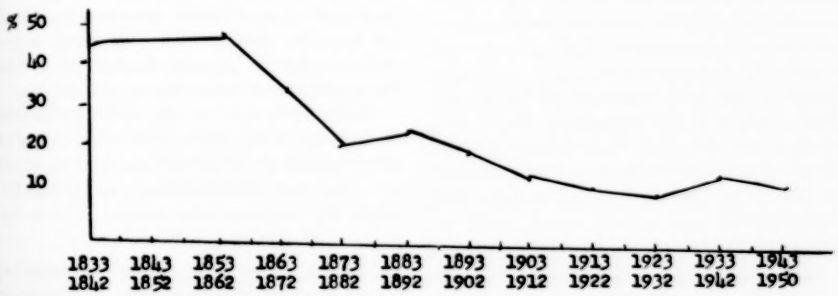

FIG. 3. Per cent of admissions discharged as recovered from Worcester State Hospital by decades for 120 years.
Data for this graph were derived from the Annual Reports of the Worcester State Hospital.

quent mental condition of those patients who were discharged from this institution as recovered on their only admission, and of those who recovered on their last re-admission:

'Dear Sir,—I would esteem it a great favor if you would send me answers to the following questions (obtained either from personal knowledge or as a result of inquiry) relating to _____ of _____, a patient discharged from this institution_____18__.
Did _____ remain well,
Has _____ ever been in any hospital for the insane since leaving Worcester? If so, where? How many times? How long a time? and state of health after discharge.
If lving, where? and mental condition. If dead, date and cause of death.
Did _____ die at home, in hospital, or almshouse?
What was _____'s mental condition at time of death?
If you are unable to answer these questions, will you be kind enough to give me the address of some member of the family or acquaintance who would be likely to possess the desired information? The object of my inquiry is to perfect the medical history of the hospital.
Very respectfully,
John G. Park
Superintendent

"The above inquiries have, to this date, been made regarding only 211 patients, all of whom were discharges previous to 1840. Owing to the time which has elapsed since their connection with the hospital great difficulty has been experienced in finding anybody who knew or remembered anything about many of them. Satisfactory answers have, however, been received in 94 instances thus far, and as the cases become more recent, a much greater per cent of replies is expected" (1).

Farther on in the report Dr. Park analyzed the returns of the 94 patients about whom replies had been received. Eight were still alive and had remained well since discharge; 40 had died but had remained mentally well all their lives. Of the remaining 46, 7 had committed suicide, and 10 had been re-hospitalized. Twenty-nine more were considered to be insane at the time of reply, but were not hospitalized.

In the annual report of the next year, Dr. Park revealed the full scope of the study. He also indicated that the source of motivation for doing the study lay in the person of Dr. Pliny Earle, who was at the time arousing considerable attention with his statistical studies designed to prove the incurability of mental illness.

"This subject (i.e., recoveries not permanent cures) has been elaborated at considerable length in the recent reports of Dr. Pliny Earle of the Northampton Lunatic Hospital. From information received upon this point in answer to circulars sent out inquiring about the subsequent mental condition of those persons who were discharged from this hospital as recovered on their *only admission* and of those who were discharged recovered on their *last re*-admission, it appears that of 1,171 circulars sent out, up to September 30, 1882, satisfactory answers have been received from 669. Of this number, 73 men and 80 women remained well and were living at the time of reply, and 83 men and 114 women remained well during life; 19 men and 11 women committed suicide, and the remaining 289 relapsed and had been admitted to other hospitals or had been inmates of almshouses, or had been cared for at home, where they died or are still living. No information could be obtained in 129 cases, 373 circulars remain unanswered. As was stated in my last report, a good deal of difficulty has been experienced in finding any traces of many of these cases. This is especially true of those who were committed from the cities of the state, they represent a roving population, and the records of the overseers of the poor contain no mention of them after leaving the hospital.

"I have been greatly aided by the overseers of the poor of the different towns, and by physicians and others, who have spent much time and shown much interest in obtaining for me the information furnished in table 30" (2). In the Annual Report of 1883, Dr. Park makes the following remarks:

"Information as to the subsequent history of persons who have been discharged from this hospital as recovered on their only admission or last re-admission, as tabulated in table 30, confirms the results shown in the same table last year.

"About 50 per cent suffered no relapse, but as no answers were received to one-third of the circulars sent, and taking into account the liability to relapse of those now reported

well, I am inclined to believe that this percentage should be reduced one-half" (3).

This was the last mention of the follow-up study made by Dr. Park. The work of compiling statistics continued, however, until 1893 when 1,157 replies had been received of the 1,173 circulars sent out. Of the replies, 189 provided no record. Information as to the outcome of the remaining 984 patients is presented in table 6, adapted from table 28 in the Annual Report of the Worcester State Hospital for 1893.

A total of 568 patients had either died without having a relapse or were still living and had never had a relapse. That is, very *nearly one-half (48%) never had a relapse after discharge.* Sixty-seven more relapsed and were hospitalized, but were again discharged (about 6%). Only 143 relapsed who were re-hospitalized (or sent to almshouses) and not again discharged. Another 142 had relapsed and were either still at home or had died while living at home.

All told, only 210 of the 1,171 patients again became a burden to the Commonwealth—less than 20%.

This unusual follow-up study has remained buried in these annual reports for nearly 60 years—a sad comment on psychiatric interest in recovery from mental illness. We suggest here that the results it contained were so much better than those reported by Dr. Pliny Earle, the authority on mental health statistics of his day, that neither Dr. Park nor his successor quite dared to report those results in their full connotation for fear of arousing unfavorable comment—comment which would certainly be forthcoming from those individuals who would compare them with their own results. There is no need for shyness today, however, for modern treatment results are much superior to those of the 80's and 90's of the last century. There *is* good reason to wonder, though, if a 50-year follow-up of discharged patients today would show 50 per cent of them without relapse.

3

Data available today indicate that the outcome of patients treated at the Worcester State Hospital was much more favorable than Dr. Earle contended. It is therefore

TABLE 6.—1882–1893 Follow-up of Recoveries of 1833–1846, Worcester State Hospital*

Remained well, still alive	317
Remained well through life	251 (568—48%)
Relapsed and again discharged	67
Total well or had died mentally well at 36 to 60 years, follow-up point	635 = 54.13%
Relapsed, still living	100
Relapsed, died in relapse	239
Relapsed, nothing more known	10
Total mentally ill, or had died mentally ill at 36 to 60 years, follow-up point	349 = 29.75%
No information	189 = 16.12%
Grand total	1,173 = 100%

* Data for this table were adapted from the Annual Report of the Worcester State Hospital, 1893.

pertinent to review Dr. Earle's discussion of the statistical data of that hospital as presented in his book, "Curability of Insanity". The arguments he used to prove that repeated recoveries of the same patients produced falsely large recovery rates, provide a good example of his one-sided perspective. In his discussion of this matter he based his arguments on data obtained from the annual report of the Worcester State Hospital of 1878–79 which was written by Dr. Park.

Dr. Earle first called attention to figures which indicated that of the 47 patients discharged as recovered that year only 32 were discharged as recovered for the first time. He then made a big point of the fact that the other 15 patients had been accredited at some time in the past with a total of 55 recoveries. In making this point he disregarded his own rule that recovery figures should not be considered significant unless reported as a proportion of the number of patients admitted.

He then proceeded to analyze a special study prepared by Dr. Park of the 11,000 cases admitted to the Worcester State Hospital from its date of opening in 1833 to 1875. Dr. Earle began his analysis by pointing out that the 11,000 cases represented only 8,204 *persons*, and that the re-admissions, 2,796, amounted to one-fourth of the total number of admissions and one-third the number of persons. He then emphasized that the number

of recoveries on first admissions was only 38.89 per cent of the *persons* admitted. He also quoted the number of recoveries of all the re-admissions to be 1,191, and mentioned that the whole number of recoveries was 4,382 (3,191 plus 1,191). Here Dr. Earle called a halt to the arithmetic of recovery and failed to note that the figure for all recoveries, 4,382, was 39.1 per cent of the total number of admissions, 11,000. He was no doubt embarrassed by the fact that this proportion is practically identical with the proportion of first admissions, or of *persons*, who recovered and were reported by him as 38.89 per cent. Obviously he did not wish to call the reader's attention to evidence that repeated recovery of re-admissions made so little difference in the over-all recovery rate of the Worcester State Hospital. He also made no mention of the fact that the total number of recoveries of re-admissions was 1,191 of a total of 2,796 re-admissions, or forty per cent—also very close to the proportion of *persons* recovered.

After evading evidence which did not support his contentions, Dr. Earle went to the labor of calculating the per cent recovered for each successive number of admissions from one to 23 (which happened to be the greatest number of re-admissions reported). He tabulated the results of his calculations as follows (10):

1st —38.89	8th—60.60	15th—57.14
2nd—36.78	9th—62.92	16th—75.00
3rd —46.66	10th—62.50	17th—66.00
4th —45.81	11th—61.11	18th—66.66
5th —55.45	12th—71.43	19th—50.00
6th —61.29	13th—66.66	20th—100.00
7th —61.36	14th—88.88	21st—100.00

Regarding the table he then stated, "These gradually swelling percentages are caused by the repeated recoveries of the same persons." (10). It is only too clear that Dr. Earle was going out of his way to convince the reader that repeated recoveries of the same persons caused a falsely large recovery *rate* when in fact they had no such effect. He deliberately reported percentages without giving the actual numbers of patients involved, a device which hid from the reader the information that the number of patients decreased rapidly

TABLE 7.—Record of 11,000 Cases Admitted to Worcester Lunatic Hospital from its Opening to Sept. 28, 1875.*

Admission Number	Number Pts. Having This Number Adm.'s	Dis. Rec.	Dis. Imp.	Dis. Not Imp.	Died	In Hospital 9-30-79
1	8,204	3,191	2,218	1,524	1,180	87
2	1,683	619	471	335	224	34
3	510	238	137	63	56	6
4	227	104	74	32	13	4
5	110	61	25	13	10	1
6	62	38	15	3	6	0
7	44	27	9	3	5	0
8	33	20	10	3	0	0
9	27	17	7	2	1	0
10	24	15	8	1	0	0
11	18	11	6	1	0	0
12	14	10	2	1	1	0
13	12	8	2	1	0	1
14	9	8	1	0	0	0
15	7	4	2	0	1	0
16	4	3	1	0	0	0
17	3	2	0	1	0	0
18	3	2	0	0	1	0
19	2	1	1	0	0	0
20	1	1				
21	1	1				
22	1	1				
23	1	1				

Number of persons admitted	8,204
Number of re-admissions	2,664
Re-admissions without removal from hospital	132
Total number of re-admissions	2,796
Number of cases	11,000
Cases in other hospitals previous to admission here	996
Transfers to State Hospitals in this state on 1st admission	783
Removal to other institutions in this state on 1st admission	29
Sent to hospitals out of state on 1st admission	15
Transfers to State Hospitals in this state on re-admission	282
Removal to other institution in this state on re-admission	11
Sent to hospitals out of state on re-admission	8
Persons admitted	8,204
Cases in this hospital	11,000

* This table reproduced from a table appearing in the Annual Report of the Worcester State Hospital, 1879.

with each successive re-admission number. Indeed, the 20th, 21st, 22nd, and 23rd re-admissions with recovery rates of one hundred per cent were all of a single patient! The original data from which Dr. Earle derived his percentages appear in table 7. This table is from the Worcester State Hospital Annual Report of 1879. It is patently obvious that Dr. Earle did not present this table because he did not want the reader to perceive that the small number of patients involved could effect the recovery rates as recorded in annual reports but very little one way or the other.

Dr. Earle continued his discussion by giving the number of deaths, which was 1,498, and with it the percentage of *persons* admitted which it represented, which was 18.26. He pointed out that the proportion of deaths was nearly three times as large as was usually reported in the annual statistics of mental hospitals. Here again he sought to convince the reader that hospital reports gave more optimistic figures than was true by neglecting to note that the death rate of 18 per cent referred to the deaths occurring in all admissions over a period of 42 years!

He then went on to quote Dr. Park to the effect that "many" patients who had swollen the number of recoveries in the past had returned to the hospital again and again and finally died there. The actual number of patients who died in the hospital on re-admission status was 318, or less than four per cent of the total number of persons admitted. It might also be mentioned that the number of patients re-admitted to the hospital more than twice was 461, or less than six per cent of the total number admitted.

Dr. Earle's quotation of Dr. Park continued with the statement that many more patients went to other hospitals and finally died in them. It should be noted that in the follow-up study presented earlier in this section this was the fate of less than six per cent of the number of patients discharged as recovered. A further statement of Dr. Park quoted by Dr. Earle was that still more patients had had repeated admissions and finally died in almshouses. In the follow-up study just referred to this was the fate of less than five per cent of patients discharged as recovered.

Both Drs. Earle and Park neglect to tell what the total figure was for all patients who either had died in the hospital, were inmates of the hospital at the time of the study, or were inmates of other hospitals or almshouses. Actually it was but 2,759 (assuming that *none* of the patients transferred to other hospitals or almshouses, 1,261, had been discharged), or 34 per cent. Thus the significant finding of the entire study was left unstated, namely that 66 per cent of the *persons* admitted had neither died in, nor were patients of, the hospital at the time of the study. He failed to mention also that 65 per cent of the first admissions were discharged as improved and recovered. One can only surmise that Dr. Earle and with him Dr. Park refused to see anything in statistical data which did not support the thesis that recovery rates were artificially swollen by the repeated recovery of re-admissions.

Dr. Earle did not make explicit, but rather hid from view, his own puristic criteria of recovery which seemed to preclude the occurrence of an attack of mental illness at any time in the life of the patient. He thus mixed his concept of a recovery rate with that of a follow-up study. By this means he could always defend a pessimistic view with the argument that lifetime follow-ups would inevitably disclose many relapses of mental illness.

Whatever Dr. Earle's underlying purpose was, he succeeded in convincing the psychiatric profession that the prognosis of mental illness was extremely poor and thus exonerated its members for poor recovery rates. The idea that mental illness was incurable became more and more popular. By the turn of the century recovery rates acceptable even to Earle (approximately 30 per cent) seemed preposterous. By the 1920's few medical officers were inclined to discharge more than four or five per cent as recovered. Progressive tightening of criteria for recovery and concomitant deterioration in standards of care were equally potent factors underlying this decrease in recoveries. Belief in the incurability of mental illness, which Dr. Earle had sold the medical profession, was

a barrier to the adoption of much needed corrective measures which has not yet been torn down.

Not all physicians subscribed to Dr. Earle's thesis of incurability. To be sure there were few who possessed as much experience with the mentally ill as he. But among those equally experienced with Dr. Earle was Dr. Isaac Ray, the American authority on legal psychiatry, a skilled moral therapist and an enlightened hospital administrator.

Dr. Ray had demonstrated to his own satisfaction that the majority of the mentally ill were curable, in his early experience with patients during the 1840's and '50's. He was aware that much had changed in American life during the decades which followed. He could not accept Dr. Earle's devaluation of treatment results reported during the earlier decades. In 1879 he presented to the College of Physicians and Surgeons in Philadelphia a paper, "Recoveries From Mental Illness" (33), which was, in effect, a rebuttal to Dr. Earle's writings.

In this paper Dr. Ray pointed out that Dr. Earle had no basis for contending that statistical reports were more biased in favor of recovery in the early history of mental hospitals than in later years. In Dr. Ray's own view recoveries actually had become less frequent. The factors which underlay decrease in recovery in his experience were: 1) poorer general health of patients from unhygienic urban centers which were increasing in number during the course of the century, 2) the appearance of greater number of patients with cerebral affections such as general paralysis which had been all but unknown in the earlier years, 3) the more frequent hospitalization of the quieter and less recoverable forms of insanity with the increase of public use of mental hospitals. Dr. Ray contended, furthermore, that a failure to recover was as much the result of a patient's not receiving a fair trail of (moral) treatment as the result of real incurability.

The statistical reports of the Worcester State Hospital provide us today with a working basis for estimating the prognosis of psychosis in general—at least in the earlier decade of the nineteenth century. Dr. Woodward's statistical reports show that he discharged as recovered, or improved, about 75 per cent of patients ill less than one year prior to admission. Dr. Park's follow-up study of Dr. Woodward's recoveries shows that half never had a relapse.

Dr. Park's 1879 study of patients who had relapsed and were re-admitted to the Worcester State Hospital from 1833 to 1875 showed that 74 per cent of these patients were again discharged as either recovered and improved on their last re-admission (1,961 out of 2,664). Only 12 per cent had died during their last re-admission (318 out of 2,664).

All told, then, it is not unreasonable to state that the natural history of psychosis in general (including cases due to organic changes of the central nervous system), one hundred years ago, was such that a large proportion of patients were able to leave the mental hospital and only a small proportion, perhaps 20–30%, were destined to die in a mental hospital. Favorable outcome was, of course, even more frequent in the functional psychoses considered alone. Modern discharge rates of even 80 to 90 per cent are of themselves not remarkable in comparison. Indeed, it is not unlikely that modern treatments merely shorten the period of illness and do not produce a greater proportion of discharges than did moral treatment.

Unfortunately there is no satisfactory scientific basis for comparing moral treatment with modern treatment, for there is no way of knowing definitely that patients admitted to mental hospitals 125 years ago were afflicted with mental disorders of the same type and severity as patients of today. It can only be said that case records of that era have many features in common with modern records, the main difference being that patients then were on the average considerably younger. Whatever the differences or similarities between two groups of patients, whether they be separated by one hundred years or one hundred miles, any claims as to their response to a particular treatment can always be challenged on the grounds that criteria for diagnosis and recovery are subjective or that selection of cases favors a particular outcome. Studies of the natural history of untreated mental illnesses are open to the same challenges.

Statistical studies of the outcome of mental

illnesses which base their approach solely on the assumption that they are disease entities analogous to those of internal medicine must of necessity exclude all personal and environmental factors as mere incidentals. Thorough search and elimination of such incidentals, however, leave a remarkably small residue of cases which have objective features in common which point to the presence of the same absolute disease entity at work in all the cases. Yet because psychiatry has felt obliged to apply the scientific method, as it is known in the physical sciences, it has had no recourse but to hold to the conclusions arrived at from the study of just such a small selected minority of the patients admitted to mental hospitals: namely that the prognosis of scientifically proven psychosis is very poor and that its course cannot be altered by any known means.

It is possible to criticize the reported good results of both moral treatment and modern psychiatric treatment on the grounds that the majority of the patients treated did not have scientifically proven psychoses. By the same token it may be said that the majority of patients admitted to mental hospitals during the period of therapeutic nihilism of the latter nineteenth century were needlessly deprived of means to recovery which could have been made available to them. An alternative explanation of the low recovery rates of that particular period might be that a far greater proportion of patients had "genuine" psychosis during that period than before or since. Yet in view of the evidence that patients suffered extreme neglect during those years it does not seem a likely explanation.

From both a practical and humane point of view it is essential to learn how over-all discharge rates of mental hospitals are affected by the mode of living which patients experience. The statistics of moral treatment reported here are at least presumptive evidence that efforts to meet the personal needs of patients are well worthwhile.

VI. Moral Treatment Defined

We have suggested that moral treatment was in effect comparable to modern therapeutic efforts which include psychotherapy, occupational therapy and recreational therapy. We have also shown that the founders of American psychiatry had an attitude of hopeful optimism with respect to the curability of insanity by means of moral treatment. We have demonstrated furthermore that their optimism was founded on a practical statistical basis. We have, then, established in some measure the value of moral treatment but have not yet shown specifically and concretely what moral treatment was.

In 1845 Pliny Earle described moral treatment at the Bloomingdale Hospital in the following words:

"In the moral regimen at this institution, every practicable effort is made to pursue that system, at once gentle, philosophical, and practical, which has resulted from the active and strenuous endeavors of many philanthropists, in the course of the last half century, to meliorate the condition of the insane. The primary object is to treat the patients, so far as their condition will possibly admit, as if they were still in the enjoyment of the healthy exercise of their mental faculties. An important desideratum for the attainment of this object is to make their condition as boarders, as comfortable as possible; that they may be the less sensible of the deprivations to which they are subjected by a removal from home. Nor is it less essential to extend them the privilege, or the right, of as much liberty, as much freedom from personal restraint as is compatible with their safety, the safety of others, and the judicious administration of other branches of curative treatment. The courtesies of civilized and social life are not to be forgotten, tending, as they do, to the promotion of the first great object already mentioned, and operating, to no inconsiderable extent, as a means of effecting restoration to mental health" (11).

In 1847 Dr. Amariah Brigham, superintendent of the Utica State Hospital, New York, defined moral treatment as follows:

"The removal of the insane from home and former associations, with respectful and kind treatment under all circumstances, and in most cases manual labor, attendance on religious worship on Sundays, the establishment of regular habits of self-control, diversion of the mind from morbid trains of thought, are now generally considered as essential in the moral treatment of the Insane." (5).

The means which Dr. Earle went on to describe included manual labor, religious worship, recreative exercise, amusements, restraints, and attendants.

In his discussion of attendants Dr. Earle made clear his concept of moral treatment:

"It requires but little experience, in an Asylum, to convince a person of the identity between a judicious parental government, and that system of management which is best adapted to the insane. The motives, the influences, and, as a general rule, the means necessary for the good government of children, are equally applicable, and equally efficient for the insane. In fact, this system is the great desideratum, at every Asylum; and without it, it is impossible for the management to approximate that degree of perfection which it is desirable to attain.

"The most essential element of success in the establishment and maintenance of such a government, is a corps of intelligent attendants, of kind disposition, and good judgment. Such, and such alone, can sustain a disciplinary code, founded upon kindness and supported with firmness.

"Much pains has been taken, at this institution, to procure attendants of this character, and especially as regards the men's department, the efforts have been rewarded with a good degree of success. Nearly all the young men who have been so employed during the last few years, were from the country, and so well educated that they had been accustomed to teaching school in the winter.

"It is needless to describe, in detail, the numerous advantages of attendants of this kind over those who are ignorant, and whose only ideas of exerting control over others, are measured by the strength of their arms. He who has once tried the former, would greatly deplore the exigency which should render it necessary to return to the latter." (11).

One of Dr. Earle's favorite means of treatment was formal instruction, including lectures and school exercises:

"Soon after the writer of this article first directed his attention to the treatment of the insane, he became convinced that lectures upon scientific and miscellaneous subjects might be made an object of interest, as well as of utility, in the moral treatment of patients in public institutions. Accordingly, being at that time connected with the Frankford Asylum, near Philadelphia, he induced the managers of that institution to purchase an air pump and other philosophical apparatus, and with the aid of these he gave a series of experimental lectures before the patients, in the winter of 1841–42. The results were as favorable as had been anticipated.

"The writer became connected with the Bloomingdale Asylum in the spring of 1844, and in the autumn of the same year, encouraged by the Governors, who made a liberal appropriation for the purchase of apparatus, commenced a course of lectures, which were continued through the winter. The success was sufficient to induce perseverance in the plan, and a similar course has been delivered in each succeeding year since that time. The last commenced on October 12, 1846, and ended on May 3, 1847. It consisted of 38 lectures, as follows:

	Lectures
Natural Philosophy	4
Chemistry	6
Animal Physiology	9
Astronomy	10
Physical, Intellectual, and Moral Beauty	2
Recitations of Poetry	1
History and Description of Malta	2
Greece as it was in 1838	2
Characteristics of the Americans and Europeans	2

For the suitable illustration of the lectures, the Instituion is furnished with the following apparatus:

1st—An air-pump, with its accompaniments.
2nd—A set of mechanical powers.
3rd—A magic lantern.
4th—An orrery.
5th—An electrical machine, with its implements.
6th—Pneumatic trough, receivers, retorts and other articles used in chemistry.
7th—One hundred and forty-six diagrams, painted upon bleached muslin, illustrative of the structure of the human frame, and that of the lower order of animals.
8th—Twenty similar diagrams explanatory of the laws and phenomena of light.
9th—Twenty-five astronomical diagrams.
10th—One hundred diagrams illustrating various subjects.

The lectures were delivered in the evening and attended by an average number of about

70 patients. Their attention and deportment would compare favorably with that of the audiences ordinarily attendant upon lectures.

"It will be perceived that such subjects were selected as are susceptible of demonstration or illustration, experimentally, or through the medium of diagrams. Such topics are considered as the most suitable, inasmuch as the perceptive faculties are called into action by addressing the eye, as well as the ear. As a general rule, this holds good; but of all the lectures mentioned in the foregoing list, it is believed that none commanded more profound attention, or gave more general satisfaction, than that which consisted of the recitation of poetry, with remarks upon the character of the pieces, and upon the authors by whom they were written.

"As a simple method of exerting disciplinary restraint, simultaneously, over a large number of patients, a means of fixing the attention and withdrawing the minds of comparatively a multitude from the delusions incident to their disease, we believe there is no other plan, hitherto adopted in the system of moral treatment, which will prove more generally and extensively useful than that of judicious and well managed lectures.

"... In the autumn of 1845, a school was commenced in the men's department, and continued until the following spring. It was suspended during the summer, but again opened and kept during the winter of 1846–47. It was attended by from twenty to thirty patients, of various ages and in a diversity of conditions, in regard to mental disorder. The ordinary English branches were taught, and in these some of the younger patients made considerable progress. Others reviewed what they had previously studied, and others still, interested or amused themselves by reading from entertaining books and newspapers.

"It is not to be expected that great advancement in valuable knowledge can ever be attained in a school for the insane. The only subject generally within reach, and the only one the acquisition of which needs be expected —and this indeed is much—is the exercise of a moral control over large numbers at once; subduing excitement, rousing the inactive, and giving a new current to the thoughts.

"... A miscellaneous library of about one thousand volumes is devoted to the use of the patients, and five daily and eight weekly newspapers, two monthly magazines and four quarterly reviews are also taken for them. Thus an inexhaustible fund of reading is supplied, and a librarian distributes it to such patients as are disposed to make use of it." (11).

Dr. Brigham also had great faith in the therapeutic value of a teaching program:

"... Many cases, we believe, cannot be cured or improved, but by a rousing and calling into exercise the dormant faculties of the mind. Hence schools are beneficial, not merely to the curable class of patients, but to the demented and those approaching this condition.

"In such, the active state of the disease, which originated the mental disturbance, has passed, and left the brain and faculties of the mind in a torpid state. In these cases, medicine is generally of no use,and they cannot often be much improved, but by exercising the faculties of the mind.

"But others also benefitted by devoting a portion of every day to mental improvement. To those who are nearly or quite well, and who remain in an asylum for fear of relapsing at home, or for other reasons, schools afford enjoyment and often means for improvement which are highly valued by the patients themselves.

"The melancholy and dispairing, and all those suffering from delusions of mind, and those that are uneasy and nervous, that are constantly restless and disposed to find fault and to annoy the attendants and quarrel with all about them, because they had nothing else to occupy their minds, are frequently cured by mental occupation and the exercises of a school, by attending to composition, declamation, the writing and acting of dialogues and plays. ...

"Various are the methods that may be adopted to awaken into activity the dormant faculties of the mind and to dispel delusions and melancholy trains of thought. A *museum* or collection of minerals, shells, pictures, specimens of ancient and modern art and curiosities of all sorts, should be connected with institutions for the insane. The opportunities are abundant for making interesting and valuable collections of this kind by the aid of the patients that have recovered and their friends.

"By means thus indicated institutions for

the care and cure of those affected by mental disorders will be made to resemble those for education,-rather than hospitals for the sick, or prisons for criminals, and when we call to mind that the greater part of those committed to such establishments are not actually sick, and do not require medical treatment, but are suffering from deranged intellect, feelings and passions, it is evident that a judicious course of mental and moral discipline is most essential for their comfort and restoration" (5).

Dr. Brigham also considered manual labor to be of therapeutic value and recommended that hospitals have a variety of workshops available to the patients.

"Bodily labor as a measure for benefitting and curing the insane is generally recommended, and we allude to it now, but to express the hope that better arrangements for this purpose will be made in institutions for the insane, than have hitherto been. Some have an insufficient quantity of land, and are destitute of workshops. We think every such institution should have a good farm attached to it; but still a farm is not sufficient, as it can afford employment but to comparatively few, and only for part of the year. We think several workshops should be connected with every large establishment for the insane, and be so connected, that the patients of each class can go to them without risk or exposure. One or more rooms in connection with each hall for patients, is needed in order to afford employment to all that would benefit by it. In such rooms, dressmaking and tailoring, cabinet work, the manufacture of toys, basket-making, shoe-making, painting, printing, bookbinding, and various other employments may be carried on to the advantage of many patients, some of whom cannot be employed on the farm or in shops disconnected with the asylym. In the construction of asylums for the insane, we think there should be more care taken to provide convenient rooms for the purposes mentioned.

"But however useful bodily labor may be to some, we regard it as less so generally as a curative measure, and less applicable in many cases, than mental occupation or the regular and rational employment of the mind.

"In fact, manual labor, we believe, proves more beneficial by producing this result, that is, by engaging the attention and directing the mind to new subjects of thought, than by its direct effect upon the body. Not infrequently manual labor appears to be injurious, especially in recent cases; it accelerates the circulation, and sometimes reproduces excitement of mind in those who have become quiet and convalescent.

"We apprehend many have erroneous views on the subject of manual labor as a remedy for insanity. It is undoubtedly useful of itself in some cases, but it rarely cures. The large majority of patients that recover are restored without it, and most of the work performed by this class in lunatic asylums is after convalescence is well established." (5).

From the writings of Earle, Brigham, Woodward, Butler and Ray, referred to in this section and others, it becomes manifestly clear that moral treatment was in no sense a *single technique*. Yet it had a definable goal—that of arousing the dormant faculties of the mind. Every available means was employed to achieve this end. The very matrix of moral treatment was the communal life of patients and hospital personnel. Every aspect of daily living was utilized by the physician for its therapeutic effect in awakening feelings of companionship in the patients. The chief modalities used in awakening such feelings were those endeavors which required the patient to invest interest in something outside himself in cooperation with others, namely manual work, intellectual work, recreation, and religious worship.

Psychotherapy, as such, was not mentioned, but it took the form of patients sharing past experiences with each other and discussing these experiences both in groups and privately with their physician. Ray and Butler, in particular, emphasized the need for the physician to know the experiences of each of his patients.

Moral treatment might be defined as organized group living in which the integration and continuity of work, play and social activities produce a meaningful total life experience in which growth of individual capacity to enjoy life has maximum opportunity.

The moral therapist acted toward his patients as though they were mentally well. He believed that kindness and forebearance were essential in dealing with them. He also believed in firmness and persistence in impressing on

patients the idea that a change to more acceptable bahavior was expected.

One might say that moral treatment was essentially a teaching program in how to make friends and enjoy outside interests. A hospital managed according to its principles was a going concern as productive as a university in providing individuals with greater capacity to enjoy life and take part in society. Amariah Brigham expresses this thought in the following passage:

". . . When such a system as we have briefly indicated or rather hinted at, is judiciously introduced into asylums, with convenient rooms and suitable books and apparatus, we apprehend that trivial and objectionable amusements will be abandoned by the inmates themselves for more rational enjoyments—enjoyments which, while they serve to dispel the darkness and delusions that effect many, will at the same time have the effect to improve their minds and enable them to leave the institution not only rational, but better qualified by increased intelligence and power of self-control for encountering the troubles and performing the duties of life." (5).

Moral treatment, in the modern technical jargon, is what we mean by resocialization by means of a growing list of therapies with prefaces such as recreational, occupational, industrial, music—with physical education thrown in for good measure. These do not add up to moral treatment, however, either in terminology or in application. There is no equivalent to the word *moral* in use today which implies an integrated total treatment program. There is also as yet no such thing as an integrated program of social therapy in force today. And only a few hospitals are making progress in developing such a program.

The modern physician trained in dynamic psychiatry based largely on psychological concepts tends to look upon moral treatment, with its emphasis on work, play and social activities, as being a rather naive approach to the treatment of mental illness. The most he can grant is perhaps its palliative value. He is not interested in methods not based on finding and removing the cause of illness. He cannot help but feel that the founders of American psychiatry must have been completely lacking in their understanding of mental illness to prosecute with enthusiasm such superficial measures.

It is not quite scientific, however, to judge our psychiatric forefathers as totally ignorant of the nature of mental illness simply because they did not formulate their ideas as we do today and did not use the vernacular of modern psychodynamics. We cannot assume that they were devoid of intuitive understanding of mental illness. There is ample evidence that they thought a great deal about the role of child training and psychological trauma in the causation of mental illness. They took for granted the fact that mental illness was primarily an emotional disturbance, and recognized the need to know each patient's life experience in order to be able to help him.

As therapists they were guided by the philosophical assumption of the totality of personality and were thoroughly familiar with the effect of the emotions on bodily functions. The attitude which they felt must be held toward a mentally ill patient was one which granted him the dignity of expecting him to behave in a normal way but which exercised kindness and forebearance in the face of his abnormal behavior. The inculcation of this attitude in all the hospital personnel was an important part of moral treatment.

Against the background of this attitude, coupled with the knowledge that physicians and attendants shared the hospital living experience with the patients 24 hours a day, seven days a week, it is not difficult to see how group living could be fashioned into a highly psychotherapeutic experience.

From a psychodynamic point of view it is most significant that the superintendent of the moral treatment era often made reference to "our family" in his annual reports. The family to him included the patients and attendants as well as his own wife and children. It is not remarkable that he should feel like a father to his patients, for he ate, worked, played and worshipped with them. It would likewise be surprising that he should acquire a fundamental understanding of personality through prolonged and intimate contacts with his patients in a wide variety of activities and interpersonal relationships.

As we become better acquainted with the family life aspect of moral treatment we realize

that hour by hour activities within the hospital must have contained events of great psychodynamic importance, which could be turned to therapeutic value by an experienced psychiatrist.

The forebearance of the hospital staff allowed expression of antagonism; opportunity to work at such things as carpentry, toy-making and gardening gave release to creative urges and satisfaction for recognition. Games of chance and skill provided a setting for giving vent to competitive drives. The writing and acting of drama gave free rein to exhibitionist tendencies. The plastic arts allowed sublimation of pregenital drives. Liberty to handle sharp instruments of steel served to allay fears of impotence and mutilation. In connection with the latter, Dr. Woodward's comment in his Annual Report is of interest:

"There is no employment in which they (the patients) so cheerfully engage as in haymaking. From twenty to thirty workmen were often in the field at one time, all busily employed. At one of my daily visits to the hayfield I found *four homicides* mowing together, performing their work in the best manner, and all cheefrul and happy." (15).

It might be pointed out that these four homicides each did his mowing with a scythe—a tool with a three foot blade sharpened to a razor's edge and attached to a five foot shaft!

If we reflect long enough on the attributes of moral treatment, we cannot escape concluding that moral treatment contained much that has been found of value in play therapy with children and group therapy with adults. It not only allowed freedom of expression but provided a variety of means for that expression.

We can also begin to appreciate how great the moral therapist's knowledge of a given patient's behavior must have been and how great the means he had at his command with which to modify behavior. Indeed we might even ask if psychiatrists have ever known psychotic patients so completely or labored so earnestly for their welfare. Outside the moral treatment era few psychiatrists have had opportunity for direct observation of the behavior of their patients in a variety of actual life situations. Only recently has a body of knowledge comparable in content to that of moral treatment been accumulated by workers in the interpersonal relations school of psychiatry. Their findings do not indicate that life experience in a mental hospital is of superficial importance to either patients or hospital personnel. Quite to the contrary they disclose the inadequacy of interview methods by themselves for learning how personality unfolds in the course of actual living.

Personality performance within the circumscribed situation of the interview cannot be assumed to be a representative sample of performance in the open field of society. Those who know full well the complexity of the problem involved in drawing valid conclusions from free associations produced by a patient in a single hour cannot help but feel that any attempt to draw conclusions from the vastly more complex data of social behavior is naïve. Psychiatry has not yet reached the stage in which it is recognized that with the same elements there may be many orders of phenomena governed by different laws. In the field of physics, which long ago reached this stage, the researcher in the atomic structure of gases does not feel logically compelled to look upon research in meteorology as naïve.

The entry of the social scientists into research in mental illness brings a still broader perspective to bear on the problem. The sociologist can investigate the role and function of a mental hospital with the same methods he would use in studying the relationship of a modern industrial company to society as a whole. The anthropologist can study mentally ill patients with the same approach he uses in studying an Indian tribe.

The absence of social science perspectives explains in part the failure of psychiatrists to apply moral treatment when charged with the care of patients whose ethnic and socio-economic background was unfamiliar.

VII. "Way of Life" and Mental Illness

It is the considered opinion among modern psychiatrists that mental illness is understandable as a condition in which mental traits common to all mankind are exaggerated by stressful life situations to a degree which impairs ability to get along with one's fellows. In view of this opinion it is pertinent to note the more obvious differences in the life

stresses which obtained in those periods of American history when the mentally ill fared the best and the worst in the institutions created for their care.

American life in the early nineteenth century was characterized by a social structure in which the individual could experience a wide range of close human contacts. Families were large, and communities were small. There was maximum opportunity for each person to have first-hand knowledge of a large variety of personalities and behavior. The village school, town meeting house, and local church were single room structures which further accelerated getting acquainted among children and adults alike. The teacher, selectman, overseer of the poor, clergyman, and physician not only knew individuals well, but knew them as members of families and groups whose histories were known to all.

In a setting of such close enduring human relationships the needs of individuals and their sufferings at the hands of others were matters of common knowledge. Social responsibility was based on shared personal experience. Where everyone knew everyone else's affairs, interactions among individuals were strongly conditioned by a backlog of knowledge of each other which was so taken for granted that it could remain unspoken and yet be the prime factor underlying mutual understanding and determine the outcome of the interaction.

In this sort of social atmosphere the roots of personality could sink deep and radiate widely. Stability was the natural consequence of growth in the rich soil of highly interactive community living. Maturity and sense of responsibility came early in life. Self-support, marriage, and child-rearing began in adolescence. Professional men and artisans began their careers in their early twenties often after serving apprenticeships to their own fathers.

Social stability, early psychosexual maturity, and respect for individuality were as much the consequence of small-community life with its reservoir of common experience as of the American ideology of freedom. Indeed the small community was the proving ground of this ideology and, as such, gave it special form—the special form of a society whose economic foundation was small-scale subsistence farming and handicraft.

Child-parent-grandparent relationships in this period of high birth rates were such that those past the reproductive period were in a small minority while those not yet biologically mature were in the majority. Those in the reproductive period of life occupied an intermediary position. Grandparents were not only an asset to busy farm households with many grandchildren, but were relatively few enough to be in actual demand. In the absence of an educational differential between children and parents in the early nineteenth century, grandparents occupied a revered position as sources of wisdom and knowledge. Their reminiscences of the past were of value to their children and grandchildren since they were still pertinent to current social conditions. Times did not change at a pace rapid enough in that era to give the recollections of grandparents a quality of irksome remoteness.

The small-community era of American history was attended by stresses to which all were exposed regardless of social or economic status and which all accepted as necessary evils. Morbidity and mortality rates from infectious diseases were high, expecially among infants, children and young adults. The sorrows of sickness and death of loved ones had the effects of strengthening emotional bonds in an already intimate community life.

Richness of human contacts in early American life produced an awareness in community leaders of human needs—an awareness which led state legislatures to support the founding of public schools and state mental hospitals. Motivation underlying the creation of community services for the underprivileged was largely based on first-hand knowledge of the needs of specific individuals.

Unlike Europe, America was in the small-community stage of social development (in which public affairs could be conducted on the basis of personal acquaintanceship) when the ideas of the enlightenment became a guiding motif. The humanistic philosophies of Benjamin Franklin, Thomas Jefferson and Tom Paine which had incubated for several decades found new impetus from men like Ralph Waldo Emerson, William Ellery Channing,

Horace Mann, and Samuel Gridley Howe. The early part of the nineteenth century thus witnessed the rise to social leadership of men who were not only imbued with humanistic ideals but who also had personal knowledge of human problems from their intimate contact with small-community life. The appearance of moral treatment of insanity was a natural outgrowth of the prevailing spirit of the times. The mentally ill met with the same goodwill understanding, and sympathy that was extended to all victims of misfortune.

Moral treatment was pursued with the greatest enthusiasm and was most effective during this rather short-lived humanistic, small-community phase of American history. This was a period during which mentally ill patients and their physicians both had a large backlog of enduring human contacts in their life experience and shared a common cultural heritage. These factors favored understanding of patients by the physician and provided him with clues to their psychological and social needs. They were both well versed in group living and not at a loss when it came to endowing their hospitals with the qualities of genuine community life.

Moral treatment was not a specific procedure but rather a general effort to create a favorable environment in which spontaneous recovery could take place. This general effort was supplemented by a more specific effort to give whatever psychological help that seemed to be needed. Recovery and discharge rates were not so much statistical representations of the result of a given treatment as as they were records of the natural course of mental illnesses in general when not artificially obstructed. Moral treatment was essentially the art of eliminating obstacles and providing aids to the patient as a person. It was actually little more than a common sense approach to the problem of mental illness which sought, first, to learn the natural course of the illness and, second, to discover what means *already at hand* could assist the recovery process.

During the course of the nineteenth century the familiar pattern of small-community life gave way to unfamiliar ever-shifting patterns of big-city life in which the individual exchanged long enduring contacts with relatively few people for evanescent contacts with a multitude of people. The family became smaller, more dependent on money income, and less secure. The father competed on the open market for work under employers he did not know personally. Except for his immediate family the individual was essentially alone in the midst of many. Remoteness and impersonality in human relations were increased by no-quarter competition for work and wages.

These changes in the social relations of the individual took place at the same time that public leadership acquired more and more reverence for both property and materialistic science. Political and business leaders acted in accordance with "social laws" which they endowed with the validity of the law of gravitation. The legal system itself became more rigidly mechanistic. Science was not only mechanistic and materialistic but was looked upon as a body of fixed truth, hard cold facts wholly independent and outside man. It was no longer cherished as man's brain-child or as evidence of the heights to which the human spirit could rise as it had been in the eighteenth and early nineteenth centuries. Quite to the contrary science had become the final reality before which man must bow. Idealistic, humanistic social goals had to be abandoned in view of social laws derived from the survival-of-the-fittest version of evolution. Social leadership determined its course of action not on the basis of first-hand human experience but on the basis of reasoning from supposedly well-established scientific premises. Impersonality in human relations carried to the point of scientific detachment led the most educated members of society to look upon human sufferings as phenomena to be noted as consequences of inexorable social laws.

Toward the end of the nineteenth century community life underwent more and more disruptions. Industry expanded immensely; immigration increased by leaps and bounds and more than made up for the thousands of Americans who went to take advantage of free land at the frontier. Within a few years the almshouses, hospitals and public schools of the North Atlantic states were overcrowded with destitute immigrants. The orderly process building a better society was rudely interrupted by the onrush of events. The

increased flow of wealth which accompanied the exploitation of natural resources, railroad building, and expansion of factories, found its way to unexpected places. Men became rich who had once received charity. The old ideas, of who was underprivileged and who was not, no longer held. Many a philanthropist of earlier years found himself poorer than men he had once helped. Such disruption of relations among men left small inclination to benevolence toward mankind as a species.

One of the most vigorous proponents of the thesis that society is subject to immutable laws was William Graham Sumner, professor of Political and Social Science at Yale University from 1872 to 1909. Sumner contended that, "The truth is that the social order is fixed by laws of nature precisely analogous to those of the physical order. The most that man can do is by ignorance and self-conceit to mar the operation of social laws." (12). Sumner taught that poverty belonged to the struggle for survival and objected vehemently to legislation for aid to the poor. He wrote, "A law may be passed which shall force somebody to support the hopelessly degenerate members of a society, but such a law can only perpetuate the evil and entail it on future generations with new accumulations of distress." (13). He insisted that poverty was the result of vice and derided the democratic humanitarian ideas of the eighteenth and nineteenth centuries as empty speculation. He predicted that "The mores of the twentieth century will not be tinged by humanitarianism as the last 100 years have been." (14). Sumner urged that competition should be more vigorous and exhorted men to be frugal, sober and wise. He specifically warned: "Let it be understood that we cannot go outside this alternative: liberty, inequality, survival of the fittest; not—liberty, equality, survival of the unfittest. The former carries society forward and favors all its best member; the latter carries society downwards and favors all its worst members." (15).

During the years that Sumner and other intellectual leaders were preaching against America's traditional democratic ideal, the middle classes were becoming more and more impersonal in their dealings with their fellow men and more careful about the company they kept. They were receptive to the sort of social attitude prescribed by Sumner, for it provided a comfortable and supposedly scientific rationale which absolved them of all guilt for any contributions they might make toward the sufferings of the less fortunate members of society.

Intolerance toward victims of misfortune which had characterized the Calvinism of colonial times reappeared in the latter part of the nineteenth century under the aegis of science in the form of social theory derived from the survival-of-the-fittest version of evolution. In its new form the elect were the biologically fit, and the damned, the unfit. Revelation by way of sermonizing and the Bible was replaced by education as the road to power and survival. Virtue, however, was still a matter of frugality, self-denial and hard work. Its reward was still property. The old severity of Calvinism with its intolerance of the pauper as someone accused also returned. This time the work of heredity rather than the work of the devil was blamed for the pauper's blighted state. The purportedly scientific rationalization for accepting poverty as inevitable had one advantage for the economically secure over Calvinism, for the former implied no responsibility whatsoever of the fit rich for the unfit poor.

Science, by the end of the nineteenth century, was no longer a means to a humanistic end. It had instead risen to a position of dominance in shaping human hopes. Evolutionary theory had reduced man to the status of a mere subject of physical science.

The great change in American life and thought toward the end of the last century was grimly reflected in the care given the mentally ill. Mental hospitals as we have seen became asylumns for the hopeless in which patients were shamefully neglected.

Relationships between physicians and patients had changed greatly since the era of moral treatment. Physicians and patients, especially in the large state hospitals, no longer shared a common cultural background. Furthermore, the majority of patients came from a social class which knew no security while the physician, become alienist, came from a class which blamed the lower stratum of society for its degraded state and prided

itself on its remote and impersonal dealings with people. In the light of these differences in life in the early and late nineteenth century, it is not surprising that mental hospitals in the later period were mere custodial institutions in which patients were given nothing more than the most meagre accommodations and a diagnosis.

The attitudes of physicians toward mental illness itself had also undergone changes. Social distance between physician and patient and physician and attendant fostered the development of a habit of mind which dealt with patients as impersonal cases. Lack of acquaintanceship with patients as persons and the actual impossibility of becoming well acquainted with many hundreds of patients were strong forces motivating physicians to seek the answers to mental illness through attempts to discover and identify physical disease entities. The very success of the methods of physical science in pathology, physiology, and bacteriology encouraged psychiatrists to adopt analogous mechanistic concepts of mental ills.

The observation by pathologists of microscopic lesions in the central nervous systems of patients who had been mentally ill made a profound impression on many psychiatrists. Mental illness, they concluded, could no longer be expected to become understandable through study of the patient's behavior. The behavior of the mentally ill could no longer be endowed with meaning having to do with the environment when it was looked upon as a result of mechanical defect in the central control station of the body.

Once the mechanical defect concept of mental illness was adopted, no such thing as true recovery could be accepted. Remissions, to be sure, might occur as in other physical disease such as multiple sclerosis, but the course of the illness could only end in death! The chief psychiatrist of mental hospitals could no longer in good faith discharge a patient as recovered. Indeed, discharge at all seemed highly ill-advised since relapse was considered inevitable. Also there was the chance that the patient might die at home, and the hospital lose another autopsy! From such a point of view moral treatment no longer made sense, and the cost it involved could not be justified.

The susceptibility of physicians to the dicta of the laboratory rendered them peculiarly harmful as adminstrators with authority over the movements of people. The mentally ill might have fared better if mental hospitals had been under the direction of lay superintendents with less respect for the findings of the laboratory science of the day.

The decline in recovery rates during the last century might have been due to an increase in the severity of mental illness itself. This does not seem likely, however, in view of the rising incidence of mental illness during the same period. The rising incidence of cancer and diabetes during the past 50 years is usually interpreted to mean that more cases are detected in their earlier and less severe forms as diagnostic ability improves. If the same reasoning be invoked to explain the rising incidence of mental illness, recovery rates should have increased rather than decreased during the nineteenth century. With mental illness, furthermore, early diagnosis was probably aided by the lesser tolerance of urban-industrial civilization for personality deviation.

The shift of psychiatry from an attitude which accepted the challenge of mental illness as a problem to be attacked with every means at hand to one which would not try anything without a guarantee from the clinical laboratory that its labors would not be in vain is a phenomenon worthy of study in itself. Psychiatry apparently did not have the courage to pursue its original course. It too accepted the then current notion of science that all phenomena were reducible to simple material units. Mental illness was looked upon simply as the result of damaged brain material.

It was not until pathologists demonstrated microscopic brain lesions to be minute graveyards of dead and decomposing nerve cells that the concept of irreversible tissue damage confronted the psychiatrist with the seemingly necessary conclusion that mental illness was incurable. The very idea of dead and decomposing brain cells carried with it the connotation of the patient's growing insensibility and unawareness of surroundings. The mental hospital could no longer be a citadel of hope, but had to become an asylum of dispair. The psychiatrist became resigned to the task of maintaining order and cleanliness among the

victims of progressive dementia. His only recommendation to the families of the mentally ill and to society was to forget these doomed unfortunates and carry on without them. To be pitied for a time and then neglected for the remainder of life became the lot of the mentally ill.

This dismal view of mental illness was accepted for several decades, at least by scientists and physicians. Somehow the majority of people trained in the scientific method did not question the foundation of a view that after all was but a speculation. It was an acceptable speculation, however, for it was based on supposedly valid observations of material of one sort or another that was sufficient to give it the imprimatur of science.

The significant point of interest in the history of American psychiatry is that the highest standards of care of the mentally ill (as gauged by present-day psychiatric criteria), obtained when Americans lived in small communities, were inspired by a humanistic science and were motivated to go to the rescue of fellow men in distress. Conversely, the lowest standards of care, obtained when Americans found themselves living in large industrial-urban communities, were awed by the authority of materialistic science and were motivated to get to the top in the competitive strife of rugged individualism. It might be said that the Revolutionary War established the precedent of rescuing victims of tyranny and misfortune, and that the Civil War established the precedent of neighbor fighting neighbor for material wealth and power. It is a moot point whether the post-Civil War period was the more damaging to mental health. There is no escaping the facts, however, that the incidence of mental illness increased and that the standards of hospital care deteriorated during that period.

It would appear that the way a society treats its mentally ill is in the last analysis but a manifestation or particular instance of the way the members of that society treat each other.

VIII. The Development of Scientific Psychiatry in America

Scientific psychiatry germinated in American mental hospitals during the last decade of the nineteenth century when the care of mentally ill had sunk to its lowest level of degradation. The plight of patients had become so shamefully distressing that even the belief that they were insensate victims of incurable brain disease could not justify the inhuman mode of life inflicted upon them. It was only after political corruption and medical incompetence reached the point of being a public scandal that progressive minded superintendents could gain the support necessary to introduce much needed changes. Indeed, the medical officers of mental hospitals as we have seen found themselves under fire to "do something", not only by public officials who protested that state budgets could not indefinitely stand the cost of building even bigger institutions, but also by their medical colleagues in the specialty of neurology.

The first step toward raising the institutional care of patients up to the standard of general hospitals was that of introducing nursing schools in mental hospitals. Many superintendents had long been disturbed on a purely humanitarian basis by the effect of ignorant, coarse and abusive attendants on patients. They entertained the hope that young women trained in the spirit of Florence Nightingale would have a beneficial effect on the morale of patients and also aid physicians in developing a systematic clinical psychiatry. The nursing school movement began at McLean Hospital (Massachusetts) in 1885. In less than a decade, 24 more mental hospitals had opened schools of nursing.

The crucial step toward bringing psychiatry into the fold of scientific medicine was that of adding neuropathologists to the staffs of mental hospitals. This step, first taken in the 1890's, was the earliest recognition, in America at least, of the need for research in psychiatry. Neuropathologists were the physicians most thoroughly trained in the scientific method who dealt with diseases of the nervous system and were consequently the logical choice to direct psychiatric research. The first of the neuropathologists to devote his energies on a full-time basis to research in psychiatry was Dr. Adolf Meyer. Dr. Meyer's thorough-going organization of case histories, mental and physical examinations and special laboratory studies, brought to light new findings which led to a completely new concept of mental illness. Data which had been collected to

discover relationships between mental symptoms and pathological changes in brain cells or body chemistry disclosed instead an unexpected relationship between the habit-patterns of patients and their mental illness. From his study of patients' lives, Dr. Meyer concluded that mental illnesses were understandable as the particular reactions of the total personality to life stresses. On the basis of this approach, he introduced a new scientific discipline to which he gave the name of *psychobiology*.

Meyer kindled a spirit of research in American psychiatry which drew it out of its previous state of hopeless stagnation. His psychobiological concept of mental illness attracted workers not only in medicine but in psychology, sociology and education as well. His prestige in medicine as a neuropathologist and his great learning outside medicine won him the position of spokesman for American psychiatry. Through him, much that was already present in American psychology was incorporated in psychiatry. The ideas of William James, John Dewey and G. Stanley Hall, it may be noted, had already had a direct influence on at least two psychiatrists before Meyer's time. Edward Cowles, superintendent of McLean Hospital, and William Noyes, the first pathologist at McLean Hospital, both studied under Hall at Johns Hopkins. The first issue of the American Journal of Psychology contained papers on psychiatric topics, one by Cowles on "Insistent and Fixed Ideas" and one by Noyes, "A Study of the Evolution of Systemitized Delusions of Grandeur". It is also significant that Stanley Hall, although not a medical man, was for a time superintendent of a state hospital and a member of the American Psychiatric Association.

Psychological research did not long remain limited to university laboratories. The Pathological Institute of the New York State Hospitals (founded in 1896 under Van Giessen) included a psychologist on its staff, Boris Sidis, as director of research in psychopathology. Dr. Sidis (then a Ph.D. in psychology; he did not receive his M.D. until 1908) carried out research in dissociation in psychoses which demonstrated to his satisfaction that abnormal behavior used the same mechanism as normal behavior and differed only in its social pattern. This research aroused a particular interest in the psychological aspect of mental illness in two physicians, William Alanson White and Richard Henry Hutchings, both of whom later supported the psychoanalytical movement in this country. They were the first superintendents of public mental hospitals to accept psychoanalysis. They were also the first superintendents to attempt to apply principles based on scientific psychology in the care of institutionalized patients in the United States. They both received their appointments in their thirties, in the same year, 1903; Dr. White at the Government Hospital in Washington and Dr. Hutchings at the St. Lawrence Hospital in New York.

Dr. White and Dr. Hutchings brought with them a new optimism into mental hospital work reminiscent of the optimism of Dr. Todd and Dr. Woodward in the early days of moral treatment. The actual methods which White and Hutchings employed in the care of their patients were, furthermore, practically identical to those of moral treatment. They concentrated on giving attendants and nurses a psychological understanding of mental illness. They instituted occupational and recreational programs and, despite the large number of patients in their care, sought to bring individualized attention of some sort to every patient.

By the end of the first decade of this century American psychiatry was starting on its way to freedom from the deadlock of the physical disease theory of mental illness inflicted on it by the materialistic sciences to which medicine was beholden. The list of men contributing to the psychological understanding of mental illness was growing steadily. The influence of William James, Stanley Hall and Boris Sidis had brought a number of psychiatrists and neurologists into the fold of psychology, some of whom like James J. Putnam, Isodore H. Coriat, William Alanson White and Richard Henry Hutchings had embraced psychoanalysis. Indeed, Freud himself and Jung, too, had, through the efforts of Putnam and Hall, accepted an invitation to come to America in 1909 to express their views. Abraham Brill had begun translating Freud's writings into English in the same year.

During the first and second decades Amer-

ican psychiatry began to take on a definite form with the appointment of neuropathologists with broad backgrounds in psychology and philosophy to the directorships of mental hospitals. The earliest of these was Albert Barret at the Psychopathic Hospital at Ann Arbor, Michigan, in 1906, followed by Elmer Ernest Southard at the Boston Psychopathic Hospital in 1912, and Adolf Meyer at the Henry Philips Psychiatric Clinic in Baltimore, in 1913.

The rapid growth of psychiatry in its psychological understanding of mental illness was accompanied by an equally rapid development in neurophysiology and biochemistry which appeared to provide new grounds for questioning the primacy of psychological interpretations. Psychiatrists and neurologists who supported the physical disease theory of mental illness thus acquired research allies. The refined histological techniques of Nissl, Alzheimer, and Ramon Y. Cajal provided new opportunities for finding brain lesions in mental illness. The biochemist provided techniques for demonstrating metabolic disorders, while researches on the endocrine glands and autonomic nervous system opened up even greater possibilities for finding physical causes.

In New York, Dercum and Van Giessen carried out chemical studies in mental illness as early as the 1890's, and at McLean Hospital, Folin began his chemical studies in 1900. The work of Hughlings Jackson, Sherrington, Brain and Cannon in the physiology of the nervous system taken together with the findings of experimental physiological psychology seemed to provide a basis for explaining mental illness without the help of the "psychologies of past experience" as represented by Freud and Meyer.

New findings in fields of research pertinent to psychiatry ranging from psychoanalysis to bacteriology came in a deluge after 1900. Psychiatry which had been almost devoid of any ideas two decades before became a hot bed of new ideas and controversy. Psychiatrists in general tended to pay more attention to research results which pointed in the direction of metabolic disorders or toxins as causes of mental illness—a proclivity fostered by Emile Kraepelin's writings.

Kraepelin had a curious effect on the course of psychiatry. He brought a semblance of order out of chaos in the field of diagnosis and, at the same time, injected a note of somber pessimism into the whole matter of prognosis. He stimulated a new interest in patients' behavior at the descriptive level for purposes of differential diagnosis. On the other hand, he succeeded in establishing mental illnesses as disease entities independent of the patient as a person much as Thomas Sydenham had done in the field of physical ills 200 years before. Kraepelin could invoke, furthermore, all the agents of physical disease which had been discovered since Sydenham's time as causes of mental illnesses. In particular, he favored the view that the cause of dementia praecox was a disorder of metabolism.

From the time of Newton's celestial mechanics, scientists had attributed their progress in uncovering the "laws of nature" to the capacity to arrive at detached, impersonal, dehumanized "objective" abstractions. They abhorred subjective, anthropomorphic interpretations of natural phenomena as utterly false and could not grant validity to concepts which did not have a demonstrable universal applicability. The discovery that night and day were the result of the rotation of the earth and not the rising and setting of the sun had long ago demonstrated that natural phenomena could not be explained by ordinary sense-experience. In medicine, Sydenham's concept of the disease entity had proved itself to be such a useful abstraction that all progress in medicine was thought to be purely a matter of isolating more and more disease entities, observing their course, and searching for specific treatments. Kraepelin's delineation of dementia praecox and manic-depressive psychosis through painstaking descriptive studies seemed to indicate that mental ills were amenable to the same methodological approach as physical ills had proved to be. Kraepelin's views of mental ills as fixed disease entities represented a crystallization of the medical thought of the second half of the nineteenth century with respect to mental illness. As such they had a wide appeal and greatly influenced the attitudes of physicians toward mental illness, especially dementia praecox, as incurable.

Psychiatric thought at the beginning of the

twentieth century was a highly confused state of transition from the disease entity concept of mental illness to the concept of mental illnesses as reaction types. Kraepelin's concept of dementia praecox as a disease entity was largely displaced by Eugene Bleuler's concept of schizephrenia, a concept which denoted a psychological process capable of all degrees of gradation rather than a fixed disease entity with an inevitable course. Karl Jung's studies of patients with dementia praecox demonstrated furthermore that so-called symptoms had wholly personal meaning to patients in terms of their own past experience. Psychiatry had to contend with two points of view which seemed to be logically mutually exclusive. Mental illness was either a universal disease entity or a unique reaction to life experience in each patient. Progress toward resolution of these two points of view came with the development of a broader perspective which took greater account of the similarity of personal experiences, feelings and thoughts among mankind in general as well as among the mentally ill of the world. The very universality of certain behavior patterns which had been the basis for designating a disease entity turned out to be understandable as an example of the universality of supposedly unique and personal inner-life experiences. The concept that psychic experiences could in any sense approach being both personal and universal was a contribution to modern though which was formulated in a general way by Adolf Meyer, and in a specific and more revolutionary way by Sigmund Freud.

During the first two decades of the present century psychiatry increased its scope from that of a purely medical discipline to one which included the study of psychological and social factors in mental illness. This trend is well represented in the writings of Elmer E. Southard. From 1901 to 1910, he wrote on histopathology and physical disease entities only. From 1911 to 1920, his writings included many papers on the psychological and sociological aspects of mental illness. One of his chief contributions during the latter decade, while he was director of the Boston Psychopathic Hospital, was the development of the concept of social psychiatry and the founding of psychiatric social work.

Meyer's psychobiology, Freud's psychoanalysis and Southard's social psychiatry, all strongly implied or explicitly pointed to the role of other people in both the pathogenesis and healing of mental illness. This concept owed, in some measure, its acceptance to a recovered patient by the name of Clifford Beers who told the world of experiences in mental hospitals which retarded his recovery. The timing of his story was such that it dovetailed with the concepts emerging in psychiatry and at the same time caught the public in a receptive mood. His book, "A Mind that Found Itself", published in 1908 was directly instrumental in leading to the founding of the National Committee for Mental Hygiene which chose Beers as its Secretary.

The importance of psychological and social factors in the genesis and recovery of mental illness was largely accepted by leaders in American psychiatry before the first World War. When the United States entered the war, organized American psychiatry was prepared to take psychological factors into account in the care of mental disorders of soldiers. The director of the National Committee for Mental Hygiene, Dr. Thomas Salmon, was appointed chief psychiatrist of the expeditionary forces to Europe. From his experience with war conversion hysteria among soldiers in France, Dr. Salmon described the emotional conflict underlying that disorder as the result of:

> "The many demands of the instinct of self preservation stirring deep and strong affective currents against the conscious expectations, desires and requirements of 'soldierly ideals', imbedded in a matrix of discipline" (20).

French neurologists expressed similar views placing emphasis on out-side stresses rather than on individual susceptibility. Babinski stated in his book (with Froment) on hysteria in the first World War:

> "The hysterical symptoms observed at the present time . . . appear to develop chiefly as the result of moral and physical strain, and of commotions which demand the physical resistance of the individual and predispose him to nervous disorders of this kind however unsusceptible he may appear."
>
> "It is undoubtedly one of the most widespread affections and for my part I am inclined to believe that there are very few individuals who escape when

placed in certain circumstances, and under the influence of more or less active occasional causes" (4).

The British psychiatrist, Dr. Frederick Mott, demonstrated the psychological character of a great majority of so-called shell-shock cases and emphasized the importance of moral and hospital atmosphere in the treatment of war neuroses in general. Another war experience was the breakdown of soldiers with symptoms of dementia praecox who recovered on return to the United States.

The theoretical structure of psychoanalysis was also changed by the war. Freud no longer considered the erotic drives to be the only source of motivation but included aggressive drives as a determining factor in personality development. After the war, Freud's studies of transference and Harry Stack Sullivan's elaboration of his concept of psychiatry as the science of interpersonal relations brought psychiatry another step closer to the social sciences. Another development after the first World War was the founding of a psychoanalytic sanatarium in a suburb or Berlin, under the direction of Dr. Ernst Simmel. The problem of 24-hour-a-day care of patients was one hither-to not encountered by psychoanalysts. It became immediately apparent that the course of a patient's illness was in considerable measure dependent upon relationships with other patients, attendants, and nurses as well as on his relationship to his analyst during the interview hour. In 1937, a psychoanalytic sanatarium began operation in the United States—the Menninger Clinic in Topeka, Kansas. The experience of this clinic highlighted the need for research to learn what sort of social environment was therapeutic. This led to an attempt to prescribe the kind of attitude personnel should have toward each patient, known as "attitude therapy". The concept of "milieu therapy" also appeared.

In 1938, the first papers appeared reporting social research of interaction processes in mental hospital wards (34). Since that time, an increasing amount of such research has been done.

Psychiatric progress from the time Meyer began his work was largely in the form of increased knowledge of the role of psychological factors in mental illness and in histologic studies showing the absence of organic brain changes in so-called functional psychoses. Research in metabolism, endocrinology and neurophysiology, however, was going ahead during the same years but with results of little immediate importance to psychiatry.

The contribution of neurophysiology to psychiatry has its origin with Hughlings Jackson's work showing the hierarchical organization of the central nervous system and Sherrington's work showing the inhibitory action of higher centers on lower. This work was followed by John F. Fulton's research on the frontal lobes of chimpanzees. Sections of the frontal lobes lead to more tranquil behavior a result which led the Portuguese physician, Egaz Moniz, to try lobotomy on chronic psychotic patients—a venture which gave promising results. Another area of physiological research of importance to psychiatry was that of Walter B. Cannon, showing the relationship of the autonomic nervous system to epinephrine, a finding which was followed by further studies showing the disrupting effect of fear-states and of ephinephrine on adaptive behavior. This latter finding led to Manfred Sakel's theory that in schizophrenia an epinephrine-like substance was impairing cellular function of the cerebral cortex, a theory which led him to give insulin (the "antagonist of epinephrine") to schizophrenic patients. The surprisingly good recovery rates achieved by this treatment led to its widespread adoption after the middle 1930's. Shortly thereafter, Meduna theorized that schizophrenia and epilepsy were antagonistic conditions and attempted to treat schizophrenic patients with convulsion-inducing doses of metrazol. This method also achieved good results. Shortly thereafter, Cerletti and Bini used electric shock to induce convulsions and obtained similar results. This treatment was then tried in manic-depressive psychosis and found to be even more effective in that condition. Thus research in physiology led to many "hunches" in treatment which were effective and contributed further to psychiatric progress.

Research in psychology and psychopathology has shown that mental illness in an individual cannot be understood without taking into account his interactions with his family and with society. Research in physiol-

ogy and psychosomatic medicine, on the other hand, has demonstrated the effect of emotions on body functions, while new knowledge of endocrine secretions has provided a rationale relating body chemistry to body build, (Kretchmer). The picture of mental illness which is emerging from research in the now strongly related fields of psychiatry, physiology and sociology is one in which a circular series of events occur beginning with social factors which produce psychological changes. These psychological changes then, depending on the individual's constitutional inheritance, alter physiological function which is accompanied by further psychological changes. Change in behavior elicits further reactions from society which once again produce psychological changes in the individual and repeat the cycle.

With progress of research, it is becoming increasingly clear that the treatment of mental illness involves the development of techniques for interrupting this cycle at one or the other or all of these levels. In some forms of mental illness, judicious change in the social environment alone will arrest the disease process; in others individual psychotherapy or group psychotherapy may be needed in addition. More severe forms of illness may require electric shock, insulin coma, or even psychosurgery.

The rapidly growing knowledge of the profound effects of personalities on each other is the most challenging aspect of modern psychiatry. Hospital atmosphere, morale, esprit de corps and motivation of all personnel who contact patients are matters of immense importance. Of even greater importance is the need for perceptiveness and intelligent understanding of patients by all who come in contact with them. A modern mental hospital to perform its functions must be a perennial enterprise in social engineering and education. It is immediately clear that administrative psychiatry assumes a new importance in the treatment of mental illness. It is also a little humiliating to realize that modern psychiatry is fast approaching a point of view similar to that of moral treatment as it was practiced by the founders of the American Psychiatric Association well over one hundred years ago. Our knowledge of mental illness today is more precise and more explicit in many areas. It is doubtful that our philosophical background or human understanding is significantly greater.

The great gains made in psychiatric knowledge in the past 50 years would be valid grounds for hope and optimism were it not for the discouraging fact that only a small minority of mentally ill patients in America benefit from the knowledge gained. Indeed, conditions in mental hospitals are so unacceptable that it is possible to refer to them as the "Shame of the States" (8).

To understand why the majority of American mental hospitals are not providing the standard of treatment achieved by a small minority would require a large scale sociological study.

The modern concept that mental illness is a reaction to past and present relationships with other people is understandably repugnant to our society since such a view implies that our society itself is the ultimate cause. It means that we actually do "drive" our close associates insane—something we admit only in jest. Furthermore, modern concepts of treatment which hold that mental illness is curable through relationships with other people place the responsibility to provide such relationships squarely upon our shoulders. We become even more uncomfortable when faced with the proposition that sanity and insanity are not a matter of black and white, but a relative affair depending on the adjustment of individuals to each other. Such a proposition raises the question of our own mental health. Indeed, the whole issue of mental illness becomes so unsavory at this point that we would rather put it out of mind altogether just as we have put mentally ill patients as far out of sight as possible.

We have more or less succeeded in keeping mental illness out of sight and out of mind for several generations. Medicine and law have rendered committed patients almost impotent to obtain a hearing in their own behalf. In spite of their relative helplessness they have made themselves felt, for by their very increase in numbers and failure to recover they have come to cost our society more than we like to pay for their keep. The time is at hand when we cannot afford to continue managing their lives as if they all had hopeless structured

brain defects. We have long enough permitted ourselves the luxury of isolating the mentally ill to spare ourselves the shock of seeing in them our own unacceptable traits and motives. We have long enough blinded ourselves to their great sensitivity and need for understanding companionship with the rationalization that they were "too far gone" and insensible of their surroundings to benefit from anything we could do.

Mental hospitals which have investigated the habitual modes of dealing with patients among hospital personnel have learned a lesson which cannot be disregarded—a lesson which teaches that the course of mental illness is intimately related to the relative availability of means which meet the minute by minute psychological needs of individual patients. Such investigations reveal the importance of the patient's interpretation of the behavior of hospital personnel. Interpretation of the patient's behavior has been the emphasis of modern dynamic psychiatry. Research in the social psychiatry of hospital wards is showing the importance of the patient's interpretation of the behavior of those who control him. This brings to the fore the necessity that those who attend the mentally ill understand their own behavior in order to avoid obstructing the recovery of patients. The humility required of mental hospital personnel to achieve knowledge of self is a serious demand paralleling that placed on individuals who dedicate their lives to religious or military service.

The keen perceptivity to human needs which mental hospitals must achieve in order to do justice to their patients presents an unmistakable challenge in our entire society, for it indicates how little human needs are met in other institutions of our society including families, schools, offices, and factories from which patients come. Psychiatry has the responsibility of informing the public of the needs of the mentally ill. Psychiatry also has the function of training those members of society who are motivated to work toward the recovery of patients. The community has the ultimate responsibility of seeing to it that the means are provided for *applying psychiatric knowledge*, for mental illness to a greater extent than any other is from inception to cure *primarily* a social problem.

It is over 50 years since modern scientific psychiatry recognized the importance of total life experience in the etiology of mental illness. It is only recently that psychiatry has begun to appreciate the significance of *total life experience in the treatment of mental illness*, and to understand how impersonal custodial care en masse only prolongs or produces another kind of mental illness.

IX. The Problem of Treatment in the Traditional Mental Hospital

The history of institutional care of the mentally ill can, for purposes of discussion, be separated into three phases: 1) the moral treatment phase, 2) the costodial non-treatment phase, and 3) the custodial re-education phase. Today we are on the threshold of a fourth phase, namely that of therapeutic research.

Modern therapeutic research in psychiatry embraces essentially three scientific disciplines: the physiological, the psychological and the sociological. As such it presents the first opportunity in the history of medicine for the development of an integrated approach to the scientific treatment of mental illness.

The inclusion of social science theory and methodology in psychiatric research introduces a new basis not only for evaluating the needs of patients but also for evaluating psychiatric theory and practice. It is particularly pertinent to the study of institutional psychiatry, for it provides a frame of reference for identifying habitually unrecognized and unquestioned values and attitudes, and for determining their effects on the social adjustment of patients.

Viewed from the perspectives of social science the history of institutional psychiatry becomes intelligible in terms of the social and psychological effects of medical concepts of mental illness irregardless of their scientific validity. From this point of view the significant aspect of the earliest phase of institutional psychiatry, that of moral treatment, is that it had its origin in the pre-scientific era of medicine and drew its inspiration from the same philosophy of human equality and individual rights that gave rise to our democratic political institutions. It belonged more to the

humanitarian liberal movement than to medical science. As such it paid full attention to patients as persons.

The custodial non-treatment phase of institutional care was concurrent with the early phase of scientific medicine and was conditioned by the impersonal outlook of an emergent technological-industrial society. The authoritative scientific verdict that mental illness was due to incurable brain disease eliminated the belief, on which moral treatment was based, that patients were capable of responding as persons to sympathetic human understanding. Since no scientific treatment for mental illness had yet been discovered, mental hospitals became mere recepticals for the incurable.

The re-educational phase of custodial care represented a more hopeful positive attitude toward patients in that they were regarded as teachable. Occupational and industrial therapies were formally recognized and introduced as treatment measures. Acceptance of the idea of re-education or training as treatment did not, however, indicate a change in the medical attitude that the lesions of mental disease were incurable. At most it amounted to a concession that patients could be taught to behave *like* rational human beings.

Adoption of the view that the goal of the mental hospital was to train patients to do useful work placed patients in a new relationship to the hospital. Since all the training they received was in those occupations necessary to the operation of the hospital, the patients found themselves to be participants in the business of keeping the hospital going. The fact that the greater proportion of the actual work done in mental hospitals came to be done by patients demonstrated the economic success of the training endeavor. The patients benefited from the measure of self-respect they gained from being contributing members to the hospital society. Regardless of how well they did their work, however, professional concepts of their mental condition prevented their being full accepted as co-workers or as persons.

Professional belief in the permanence of the lesions of mental disease was attended by a reluctance to release patients from the hospital even though they performed the same duties as normal rational people. Consequent accumulation of patients inevitably led to their being large numbers of unemployed and hence unfavored patients. These patients constituted a social class which ranked at the bottom of the hospital caste system.

The concept that mentally ill patients were incurable but teachable accelerated the development of the mental hospital into an authoritarian stratified class society governed by the principle of punishment and reward in pursuing its goal of controlling and training the lower classes. The living conditions of the lower classes were characterized by austerity, deprivation and bleakness. Such living conditions were entirely consistent with the value-judgment that patients were less worthy and less able to appreciate the better things of life than the upper classes.

This value-judgment was not only reflected in the living conditions afforded patients but was also reflected in all relations between hospital personnel and patients. The sheer multitude of patients as compared with the number of personnel was in itself both a contributing cause and a result of remote impersonal attitudes toward patients. Belief that patients were intrinsically irrational and unpredictable completely undermined any spontaneous inclinations on the part of personnel to treat patients in their own right as persons. The attitudes of personnel derived from such belief indicated to the patients that he lacked some essential human quality and that his only hope for approval lay in obeying orders and deporting himself as a stolid, impersonal, unquestioning individual.

The system of mental hospital management which has been handed down to the present generation resembles in many respects the totalitarian states of modern times. In the course of its development it adopted many of the practices of business, industry and scientific agriculture. Today the mental hospital with its farms, truck gardens, shops and power plants is a complete community operating at a high level of efficiency. In some respects it is typical of many large American enterprises and takes pride in its bigness. But from the standpoint of modern psychiatry and sociology it is anachronistic and unproductive, for it gives neither patients the benefit of the best

treatments known to psychiatric science nor employees the benefits of modern democratic principles of industrial organization. From the perspective of modern history, furthermore, the mental hospital stands almost alone as an example of institutions which invest their energies in preserving customs and traditions rather than in making progressive innovations.

Absence of the treatment motif in mental hospitals places all professional personnel in a contradictory role, but it is the attendant who occupies the most difficult and frustrating position. He serves as guard and taskmaster whose duty it is to preserve order by restricting patients' spontaneous movements to a minimum and by closely supervising any duty he directs the patient to perform. He is the most important person in the patient's life, but his position in the hospital hierarchy is of the lowest order. He is subjected to a rigid discipline which requires him to maintain an impersonal relationship with patients and holds him responsible for any mishap which occurs. He must constantly be on the look-out lest some patient acquire a bit of glass, a length of rope, a sliver of wood or a supply of matches; for every patient is suspect of harboring violent tendencies or desires to escape. He must even restrict conversation between patients lest altercations result. He is fulfilling his duties well if he is observed to be presiding over a scene of somber silence when the supervisor, nurse or physician "trips" through his ward. All-told his task is a thankless one, for like the patient he remains in good standing only so long as there are no mishaps. There is no way he can progress or better himself. At best, his only prospect is the endless monotony of uneventful life on a "well-managed" ward. His very acceptance of the low pay bespeaks in his own mind and in the mind of others that his work is little respected. And in the public mind his very capacity to endure close association with the fancied depravity of the mentally ill places him in a category as uniquely stigmatized as that of mental illness itself.

In order to preserve self-esteem the attendant quite naturally must represent his work in a way which implies admirable qualities of some sort in himself. He thus emphasizes to others the hazards of his job and pictures in lurid detail the savage cunning or impulsive violence of his patients. He thereby attributes to himself the socially valued qualities of shrewdness and courage and casts himself in the role of protector of society against madmen. In order to keep intact this socially acceptable version of his role, he must conceive his relationship to patients to be that of perpetual warfare or at best an armed truce. His chief weapons in this warfare come to be a severe countenance and a forbidding manner betokening mastery over the patients. The sounds of enraged pounding and loud cursing emanating from the nearest seclusion rooms are convincing evidence to patients of the futility of anything more than passive resistance.

The connotation that an attendant's friendship with a patient is a reflection on his own mental health is a force which preserves the ever present barrier between patients and attendants. Indeed, the attendant who does become friendly with patients not only runs the risk of being an outcast among his fellow attendants but also risks reprimand by the ward physician. The capacity of a patient to form friendships with hospital personnel represents a threat to the impersonal authority of the hospital. Anyone less well trained than the physician is automatically considered susceptible of being "taken in" by a patient's efforts to demonstrate his sanity and the injustice of his incarceration. On the other hand, the long-standing distrust of the attendant's character raises in the physician's mind the question of the harmful effect on the vulnerable patient of anything more than an impersonal relationship with attendants. To the extent that this bias is in any measure justifiable, it is a consequence of the hospital's own policy of selecting for attendants individuals who are forced by circumstances to work for low pay in the degrading environment of ward life.

This policy reflects the attitude that neither the mentally ill nor those who will accept work close to them are to be trusted. Indeed, the attendant charged with preventing violence is under constant suspicion of using force and violence himself. He is furthermore subjected to the control of the professional registered nurse and placed under restrictions which often vary only in degree from those inflicted on patients. In some hospitals the male

attendant is not even permitted to associate with nurses or other female personnel, such as office workers who "outrank" him. His position, except in his relation to patients, is largely that of a flunky who may be summarily discharged for not "knowing his place".

The nurse in the mental hospital has, except in the infirmary, little to do with the patient as a sick person. Instead her chief function is that of providing more complete medical control and authoritarian discipline over the hospital than physicians can achieve unassisted. The physician also has nothing to do with the patient as a healer of the mentally sick. He performs rather the function of guardianship over the patient's physical health and safety.

The mental hospital's relationship with its patients is entirely predicated on the thesis that the patient cannot be trusted and must therefore be kept under complete control. Indeed the very essence of the function of the mental hospital is that of controlling and protecting. The attendant controls the patients and protects them from each other. The nurse controls the attendant and protects the patient against his harshness or laxity. The physician controls the nurse and protects her against supposedly unprincipled attendants, while the superintendent controls his physicians and protects them against the critical public.

The energies of the hospital staff are expended in maintaining personnel at a high pitch of alertness to all signs of impending violence of patients. The prevailing psychological climate is one resembling military vigilance against attack. High value is placed on unquestioning obedience to authority, and traditional hospital customs and procedures are revered for their ostensibly time-proven worth in averting disaster. Proposed changes are viewed as threats to the security of all concerned. The entire hospital society has a vested interest in the status quo and looks to the superintendent as the greatest single stabilizing force assuring its preservation.

The modern psychiatrist who assumes the role of superintendent of a traditional mental hospital and makes plans for giving his patients the benefits of a full psychiatric treatment program thus finds himself confronted with the problem of how to change the structure, the function, and the attitudes and values of a deeply rooted social system. He cannot leave it unchanged and attain the quality of interpersonnel relations and social atmosphere essential to psychiatric treatment.

He is faced with the immediate and vital necessity of firmly establishing in the minds of all his own and the hospital's attitude of respect for patients; by raising the standard of their living accommodations to the level which is customarily expected by self-respecting citizens: by securing facilities for vocational training, education, recreation and entertainment which are on a par with those available to the general public: by sparing patients the indignity of indiscriminate detention behind locked doors: and by recognizing the right of patients to participate in their own government and in the administrative affairs of the hospital. Once these steps have been taken the superintendent can proceed in his plans for imparting to all personnel a wholly new philosophy of mental illness and an understanding of the new and crucial role of attendants in its treatment.

Yet even these necessary and elemental steps cannot be taken without a large increase in the funds made available to the hospital. At present the average public mental hospital must hold its weekly operating expenses per patient to a figure *less* than the *daily* operating expenses of the average general hospital. Such a small budget forces the superintendent to improvise and offers little prospect of doing more than raise hopes which end in frustration and discouragement. A possible alternative is that of diverting funds from the care of chronic cases and applying them to a treatment program for acute cases. This alternative could be supported on the grounds that no program of treatment has yet been developed for chronic cases comparable to that known to be effective with acute cases. It has, however, the unpalatable aspect of denying the many for the benefit of the few—an aspect which could be obviated by research in experimental development of life-experience treatment programs for chronic cases.

Another major obstacle to the establishment of full treatment programs in mental hospitals is the shortage of trained professional psychi-

atric workers. Solution of this problem at the level of the mental hospital calls for research in methods of educating non-professional personnel in the psychiatric care of patients.

The relative poverty of mental hospitals as compared with other hospitals forces upon them a passive "do-nothing" role and does not permit them to function as genuine hospitals for the treatment of mental illness.

Modern psychiatry, as it has been developed in the teaching centers of the world, encompasses so many scientific disciplines that it is beyond the capacity of any one man to master all of it. This raises the question of whether the traditional hierarchical organization of the mental hospital does not have disadvantages which impede its growth as a scientific institution. The superintendent is legally charged with full responsibility for every patient committed to his hospital. He is not free to delegate this responsibility to his staff; he can only delegate authority to act. This state of affairs favors reliance on routine and established precedent and prejudices against acceptance of new concepts and procedures. There is, however, as yet no basis from experience for concluding that a different form of organization would be more conducive to psychiatric advancement. The example of the general hospital suggests that greater advances are made when professionally independent physicians work together as members of autonomous and competitive medical services and are served by a superintendent whose chief role is that of providing them the means for achieving their goals.

In his over-all endeavor to bring modern treatments into the traditional mental hospital the superintendent is not only impeded by deeply rooted attitudes within the hospital, but he is also impeded by equally fixed attitudes in the general public. Public attitudes toward the institutionalized mentally ill lag far behind modern advances in psychiatric thought. They are an echo of psychiatric attitudes current 50 years ago when "insanity" was considered to be an untreatable disease of the brain. To the public mind, mental illness does not carry the connotation of an illness which anyone may have; it designates rather a class of human beings in which membership differentiates an individual as immutably as his race membership. The public mind also characterizes the mentally ill patient as being so completely untrustworthy, unpredictable and dangerous and indecent that he must be kept under absolute control at all times. These misconceptions of mental illness are serious enough because of the unjust and false stigma which they place upon a large number of our citizens; but of greater importance still is the circumstance that the traditional mental hospital of today operates in accordance with these selfsame misconceptions.

The superintendent who would make modern psychiatric treatment available to his patients is in a situation which calls for recognition that the community cannot reasonably be expected to change in attitudes or alter its social or financial relations with the hospital on demand. His position is analogous to that of the modern medical emissary to a primitive land who must demonstrate to the people the advantages of modern medicine over primitive medicine before he can win their support in founding a modern medical clinic. The superintendent of the mental hospital must go a step beyond this for his treatment of patients is not limited to technical matters which need not be understood by the community. On the contrary, he deals with problems which cannot be solved without community understanding and participation. His professional function is not limited to treatment of patients in the hospital but includes treatment of the attitudes of the larger community of which the hospital is a part. Problems of community dread of the hospital, misconceptions about its patients, and the general poverty of the hospital are also due to the pathologic conditions which require research and development of therapeutic skill.

The superintendent's success in securing treatment for his patients hangs largely on his success in establishing multiple points of close and enduring contact between the mental hospital and the community. The more intimately acquainted socially active members of the community become with patients, the more opportunity they will have to acquire an appreciation that the mentally ill are people in painfully difficult situations of a complexity that would defy anyone's capacity

for explanation and impair anyone's ability to get along in a society blind to the complexities of human relations. Such appreciation can win patients the respect and consideration which are their due both as sick people and as members of our democratic society.

Growth of understanding in the community that mental illness has to do with the frustrations, disappointments and injured sentiments which people unwittingly inflict on each other can lead to recognition that sub-standard living conditions and imprisonment only add injury to the patient's already damaged self-esteem. From acquaintanceship with recovered patients can come a general realization in the community that mental illness is not incurable but that its cure requires far greater of human thought and effort in behalf of patients than is now the case.

The policy of inviting the community to participate in the daily life of the mental hospital allows the public an opportunity to discover that their "good Samaritanism" does not go unrewarded. Visitors can learn that patients in their efforts to get well have done a great deal of creative thinking about human relations and can teach others much that will help them in their own life-situations. This positive aspect of the mental hospital provides a basis for its development as an educational center of great value to the community. Indeed, it is not an extravagant speculation that mental hospitals will be a nucleus of future progress in man's understanding of man, for they are natural centers for study and research in human relations and will not be overlooked indefinitely.

One lesson which can be derived from the history of institutional care of the mentally ill is that human beings are molded by whatever authority they respect and that ideas about human beings of authoritative origin eventually influence human behavior in a direction which confirms the authoritative idea.

Psychiatry as a member of the science family enjoys immense prestige as the final authority on illness of the human mind. People with sick minds, moreover, are highly sensitive to the opinions and attitudes of other people. They are profoundly affected by the fact that the law of the land has committed them to the care and custody of the mental hospital and are even more profoundly affected by the hospital's opinion of them. The history of institutional care demonstrates the different effects of optimism and pessimism. Recovery was far more frequent during the optimistic era of moral treatment than it has been since the advent of the pessimistic era of custodial care.

Modern psychiatry founded on psychology and the social sciences as well as physiology is awake to the role played by attitudes and interpersonal relations in determining the course of mental illness. Research studies in social therapy have led to the adoption of treatment programs which have greatly increased the frequency of recovery. At present such programs of treatment are to be found in only a few teaching hospitals. Over ninety-nine per cent of the mentally ill in America receive nothing more than custodial care of low standard. The real problem of mental illness today is that of motivating our society to re-instate the human rights of this great number of patients and to provide them with psychiatric treatments which have already proven their worth.

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FURTHER STUDIES ON IPRONIAZID PHOSPHATE

Isonicotinil-isopropylhydrazine phosphate Marsilid

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Iproniazid has been used mainly as an antituberculous drug but has also been of considerable interest to psychiatrists and neurophysiologists due to its neuropsychiatric side effects. The neurological manifestations observed in some of the patients treated with this drug showed evidence of widespread involvement of the central nervous system (hyperreflexia, dizziness, drowsiness and possibly hypotension), of the peripheral nerves (neuropathy), and of the sympathetic (constipation, urinary retention, etc.) (7, 16, 20). The psychiatric changes were even more diversified, ranging from subtle changes in behavior to encephalitic psychopathy (14). Most impressive, however, were the psychological changes in chronic bedridden tuberculous patients who after a few days of treatment with this drug became elated, energetic, resistant to fatigue and ravenously hungry. The early investigations (21) of iproniazid seemed to indicate that these dramatic changes were not produced by a direct effect on tuberculous lesions, and more recently Ogilvie (16), in his studies on patients under iproniazid and on controls under isoniazid[1] treatment, gave convincing evidence that the gain of weight in iproniazid patients was the result of a specific stimulating action of the drug. Unfortunately, several patients who had responded so favorably to this type of treatment became euphoric, then unmanageable, and finally some of them developed schizophrenic-like psychoses. As more and more patients were treated with iproniazid, the reports on mental complications became increasingly numerous. According to certain authors (2, 4, 15), psychotic reactions were observed in about 10 per cent of patients treated with iproniazid, and in a series of 30 individuals reported by Jenkins *et al.*, the incidence of toxic psychoses was as high as 25 per cent. According to Pleasure (18), nine patients were admitted to Pilgrim State Hospital with a diagnosis of psychosis due to iproniazid. Pleasure's data alone confirmed the fact that the drug was highly toxic considering that only severely disturbed individuals are admitted to state institutions, and that very few patients were receiving iproniazid at the time he was writing his paper. As a result of these unfavorable reports, the use of iproniazid as an anti-tuberculous drug was almost completely abandoned.

However, a few sporadic efforts were made to utilize iproniazid as a non-specific stimulant. Bloch *et al.* (3) saw in this compound a valuable therapeutic agent for tuberculous patients suffering from loss of weight and vitality. Cancer patients were treated with iproniazid, but the results were not too satisfactory (17). Bosworth (4, 5) used it extensively on non-tuberculous bone and joint infections and had considerable success in improving local pathology as well as the general condition of his patients. Hollander (9), however, was not successful in his efforts to stimulate the appetite of neurologic and orthopedic patients. Kamman *et al.* (10) used the drug on chronic schizophrenics and concluded that: "something must be occurring as the result of the drug, but something is not much."

Of greater interest were the biochemical investigations of iproniazid, especially the studies of its effects on amino-oxidase, an inactivator of adrenalin and nor-adrenalin. Zeller and Barsky (27) discovered that iproniazid inhibited amino-oxidase *in vitro* and *in vivo* and thought that this drug might be as important in the study of the adrenergic system as eserine was in research on the cholinergic system. Rebhun *et al.* (19), who studied the effect of iproniazid on a number of amines having stimulating effects on the sympathetic system, confirmed these findings. In the light of these experiments, one would expect iproniazid to potentiate the effects of adrenergic substances in the body. Symptoms of sympathetic excitation, such as disturbance of salivation, urinary retention, constipation, and loss of erection,

[1] Isoniazid is just as effective an antituberculous drug as iproniazid but is seldom neurotoxic in ordinary doses.

were indeed observed in a great number of patients receiving the drug (7). Furthermore, iproniazid would act as a cerebral inhibitor by preserving adrenalin and nor-adrenalin since both hormones block synaptic transmission in certain parts of the central nervous system (11). Serotonine is another powerful cerebral synaptic inhibitor (20 times stronger than adrenalin) (12) which is also blocked by amino-oxidase and therefore can be potentiated by iproniazid. Central synaptic inhibition produced by inactivation of amino-oxidase could explain the drop in blood pressure observed in some patients in the course of iproniazid treatment, and in this respect the drug's action would resemble that of reserpine (1, 22). Blockage of central nervous conduction would also account for psychoses and other mental changes. In this regard the psychological effects of iproniazid would be related to the mental aberrations experimentally produced by hallucinogenic drugs, such as lysergic acid and mescaline. According to Woolley and Shaw (25), ergot alkaloids and lysergic acid antagonize serotonine and create mental disorders by causing a deficiency of this neurohormone. In a later paper (26), however, the same authors felt that an accumulation and not a deficiency of serotonine might be responsible for psychotic reactions since hallucinogenic substances are inactivators of amino-oxidase. Consequently, iproniazid, lysergic acid and mescaline would increase the concentration of serotonine in the brain by neutralizing amino-oxidase; the synaptic inhibition caused by the neurohormone would then be responsible for mental changes. Recently, Hoffer, Osmond and Smythies (8) discovered a new product of adrenalin degradation which they named adrenochrome. This substance proved capable of producing psychotic-like symptoms in man. They also suggested that the blockage of amino-oxidase might interfere with the normal deamination of adrenalin and produce abnormal amounts of adrenochrome in the organism.

The effects of serotonine and synaptic inhibitions on mental processes have been the object of extensive investigations in recent years (24). Marazzi *et al.* (12) expressed their ideas on the subject as follows: "The similarity in action of mescaline, LSD25, serotonine and adrenalin make one look to a synaptic inhibitor as a basis for mental disturbance as a consequence of the pattern of inhibition developed or as a result of a release phenomenon because of inhibition of regulatory pathways." In conclusion, the blockage of central nervous conduction on the part of synaptic inhibitors, such as iproniazid, could release mechanisms in the central nervous system which might lead to correction or aberration of mental processes.

Materials and Methods

In a recent investigation, 19 patients were studied by the author (6) for the purpose of evaluating their psychological reactions to iproniazid. The high toxicity of the drug was confirmed by the fact that treatment was discontinued in eight patients due to mental aberrations. However, in the course of this study, the author was as impressed as previous observers by the possibility of using iproniazid as a stimulant for debilitated and depressed patients. It was assumed that there was a sufficiently wide margin of safety between toxic and therapeutic doses to permit an effective method of administering the drug without psychiatric side effects. It was also hoped that this could be achieved by carefully screening patients prior to treatment with iproniazid, by observing their reactions in the course of treatment, and finally by adjusting the dosage in case of toxicity.

The first problem was to find a sufficient number of emotionally stable individuals for this project since previous observations seemed to indicate a higher incidence of iproniazid psychoses in those predisposed to mental illness. However, very few well-adjusted individuals were found in the material available for this project, and those who appeared to be fairly normal in the initial psychiatric interview proved to have had serious emotional disorders prior to hospitalization. Since no alarming mental aberrations were noted in these patients in the course of iproniazid therapy, an increasing number of patients with known psychiatric histories were included in the study. Only patients with gross mental disorders or organic pathology were excluded. The fact that iproniazid did not produce severe psychoses in this series could be attributed to

the use of smaller doses of the drug. Doses of 4 to 6 mg. per kg. are usually needed by tuberculous patients in the active stage of treatment, but these amounts proved to be too toxic. Bosworth (4, 5), who used iproniazid for long periods of time, had arrived at the same conclusion. The dosage, therefore, was decreased to 2 mg. per kg. or roughly to 150 mg. a day. Even this reduced dose produced harmful reactions in a number of cases and required frequent re-adjustments in the course of treatment. A dose of 50 mg. a day proved to be ineffective.[2]

Of the 20 patients selected for this study, 12 showed the desired response to the drug while the remaining 8 showed only a partial reaction or no reaction at all. Only the 12 patients with favorable reactions to iproniazid will be discussed in this paper as a more detailed report on the duration of treatment, types of physical side effects, responses of pulmonary lesions to the drug, etc., will be given in a separate paper.[3] It suffices to mention here that the patients who received treatment for more than two months gained an average of 20 lb. while those who were treated for a shorter period due to intolerance or other causes gained less than 1 lb. during comparable periods of observation.

Responses to Iproniazid

The typical reaction to iproniazid consisted of a feeling of well being accompanied by improved appetite, increased energy and diminution of sleep requirements. The patients' comments about the drug varied from individual to individual. Some patients described their feelings with great enthusiasm: "I have not felt so good in many years", "I feel I can go home now", "I still cannot believe how a few pills can make such a difference", "I cannot sleep now but I do not mind being awake"; these were typical statements made by chronic or acutely ill patients. On the other hand, there were individuals who were less verbal about the effects of the drug although their general improvement of behavior and appetite was quite noticeable on the ward. The duration of the typical iproniazid reaction showed considerable variations. In some cases, it lasted as long as the drug was administered; in others it gave way to psychological manifestations of a negative nature. Finally, there were patients in whom positive and negative responses to iproniazid alternated in rapid succession. To facilitate the discussion, the 12 patients of this series will be divided into 3 groups: patients with positive responses only, patients with biphasic reactions, and patients with irregular patterns of behavior.

Group I—included four patients who had a typical iproniazid reaction throughout treatment and had minimal or no psychiatric side effects of a negative nature.

Case 1: T. B., female, age 27. This was her first admission for tuberculosis. Her physical symptoms were underweight, asthenia, dyspnea and moderate toxicity. In the initial interview for a psychiatric evaluation, she stated that she was not a "nervous person" but admitted being tense and unable to sleep on account of her illness and recent hospitalization. Subsequent examinations, however, revealed the existence of more serious and deep-seated neurotic symptoms such as intense fears of open spaces. Iproniazid treatment was instituted shortly after her admission; the result was a rapid improvement of all physical symptoms with a considerable gain of weight. She became cheerful and extremely friendly with the therapist and often expressed gratitude for receiving treatment with the new drug. In the third month of hospitalization, she was transferred from the main hospital located in a crowded section of the city to the country sanitorium, but she could not tolerate the open spaces surrounding the buildings and had to be transferred back to her original ward. Iproniazid was discontinued in the seventh month of treatment to check an excessive gain of weight, but had to be reinstituted a few days later due to insomnia, agitation, fears, and preoccupation with her children. All symptoms disappeared promptly after the drug was readministered and failed to recur in the remaining months of her hospitalization. Prior to her discharge from the hospital, she stated emphatically that she had not felt so well in the ten years of her married life but could not elaborate on her mental changes. The drug was discontinued gradually before she left the hospital with no ill effects. She was seen in the follow-up clinic shortly after her discharge and then five months later. During the first interview, her mood was still excellent, but when she was seen the second time, she was tense, fearful and quite disturbed about her home situation.

[2] A dose of less than 4 mg. per kg. of weight of iproniazid may be ineffective in the treatment of tuberculosis and also cause drug resistance in germs. This difficulty was eliminated by adding isoniazid to iproniazid so that the total amount of hydrazine derivatives would always be adequate. This problem, of course, would not exist in the treatment of nontuberculous patients.

[3] Alfred S. Dooneief and George E. Crane: Iproniazid as adjunct in the treatment of debilitated patients with tuberculosis. To be published in New York J. Med.

Case 2: T. J., female, age 18, was admitted to the hospital for the first time with severe and rapidly progressing tuberculosis. There was no ostensible psychopathology at the time of her admission, nor did her behavior in the hospital show any abnormality. Iproniazid was prescribed to relieve asthenia, underweight and other toxic manifestations of tuberculosis. Shortly after the administration of the drug her general state of weakness disappeared rapidly, and her mood, understandably somewhat depressed, showed considerable improvement. She received the drug for seven months during which period her state of mind remained excellent and her weight rose from 79 lb. to 109 lb. The drug was withdrawn and replaced by isoniazid for medical reasons without ill effects. She continued to do well physically and emotionally.

Case 3: N. K., male, age 43, was hospitalized for the first time for his tuberculosis. His general physical condition was good and his lung condition was not severe enough to cause subjective symptomatology. The initial interview as well as subsequent interviews disclosed the existence of a severe personality disorder. He proved to be a very inadequate individual who could not face the problems created by his illness or the responsibility of providing for a wife and three children. His attitude toward reality was inconsistent inasmuch as he had an excessive concern about his family and simultaneously refused to take advantage of various opportunities which might have hastened his rehabilitation. He was brought to the therapist's attention in his fourth month of hospitalization because of his disturbed behavior. In addition to the common somatic symptoms of anxiety (shortness of breath, heart palpitations, dyspnea, etc.) he had pains in the chest, insomnia and a great variety of fears. He was particularly threatened by anti-tuberculous medication and routine blood tests. Tranquilizers were administered without success. Iproniazid was then recommended because of the danger of his losing weight and physical strength. He accepted the new drug with suspicion and insisted on receiving the minimum dosage. During the first period of treatment, all neurotic symptomatology disappeared, and there was a weight gain of 16 lb. Treatment had to be discontinued because of an increase of insomnia and severe constipation. Three months later, iproniazid therapy was reinstituted due to a recurrence of anxiety; the response to the drug was almost immediate and the neurotic symptomatology subsided completely. This second period of treatment lasted seven weeks, and then the drug was withdrawn at the patient's request. There was a third anxiety reaction which became progressively worse and reached the point where he threatened to sign out of the hospital against advice. The patient who heretofore had been suspicious of the drug requested it this time. He became asymptomatic in a few days and was able to complete his cure without further psychiatric relapses.

Case 4: M. W., female, age 47, developed clinical tuberculosis at the age of 23 and has been a chronic custodial case with extensive cavitations and fibrosis for several years. When she was selected for treatment with iproniazid, she had been in the hospital for a year and had made very little progress. She was weak, dyspneic and underweight due to severe anorexia. She had no desire or energy to leave her bed. A psychiatric evaluation failed to reveal any significant psychopathology. Her mood was in keeping with her general state of debilitation, and her tone of voice displayed an understandable dissatisfaction with her physical condition. One week after administration of iproniazid there was a remarkable improvement of all her symptoms, including cough and expectoration. She became more interested in reading and other activities compatible with her physical condition and could walk about the ward without fear. She stated repeatedly that she had not felt so happy and strong in many years. Her weight which had not changed in the first year of hospitalization increased from 106 lb. to 123 lb., in three months. She also began to visit her family in a neighboring county at regular intervals. In the fourth or fifth month of treatment, she developed paresthesias, vertigo and other neurological symptoms which were attributed to iproniazid, and the drug had to be reduced and then discontinued. Her physical energy declined, and her general condition gradually returned to her pre-treatment status. When it was established that the neurological side effects were due to streptomycin and not to iproniazid, the latter drug was re-administered immediately. After the optimum maintenance dose was achieved, the patient regained her state of general well being. She was discharged in an excellent state of mind although there was practically no improvement of her pulmonary condition at the end of her second year of hospitalization. She received no iproniazid following her discharge and was unable to maintain a satisfactory level of vitality for more than 2 or 3 months. She also lost 8 lb. in a few weeks. Although the therapist was reluctant to administer a drug as toxic as iproniazid to an ambulatory patient, he was confident that the patient would be cooperative and report to him early signs of toxicity. Treatment with the drug was reinstated and her condition improved in a matter of days. This desperately sick person is still receiving iproniazid and is capable of leading a happy and active life within the limits of her physical limitations. The total duration of iproniazid therapy in this case, including the two periods without the drug, was 22 months. The optimal maintenance dose was 150 mg. in the hospital and between 50 and 100 mg. at home.

Comments on Group I—This small group is of particular interest because of the excellent therapeutic effects and the uniformity of results in spite of the diversity of pre-treatment situations. In this series there were: 1 patient with chronic extensive tuberculosis and 3 patients with recent disease; 1 patient with respiratory impairment, 2 patients with acute toxic symptoms and 1 patient with no subjective manifestations due to lung disease; 2

patients with no ostensible psychopathology and 2 patients with clinical psychoneuroses. In all patients, the drug created a feeling of well being, and in the 2 neurotic patients, it also reduced anxiety manifestations. It did not improve personality traits, nor did it affect chronic phobias (case 1). The lessening of anxiety and agitation was probably caused by a reinforcement of pre-existing neurotic defenses in cases 1 and 3. This appeared to be particularly true in case 3 who used denial of reality as the outstanding defense against anxiety. In the intervals between periods of iproniazid treatment, he was obsessively preoccupied with problems related to his health and family, while under the influence of the drug he became symptom-free but utterly indifferent to his problems. On the other hand, the 2 patients of this group who appeared to be more mature and realistic (cases 2 and 4) found unsuspected inner resources and physical strength in the course of their therapy with iproniazid. It is true that patient 4 showed some elation, especially at the beginning of treatment, but this was understandable as she experienced unexpected relief from chronic and painful symptoms. Nevertheless, she was fully aware of the seriousness of her illness and physical limitations throughout treatment, and following her discharge, she organized her life in a sensible and constructive way.

Group II—included patients who responded to iproniazid favorably but either reverted to their pre-treatment condition or developed untoward psychic reactions in the course of therapy.

Case 5: C. S., female, age 42, was admitted to the hospital with moderately advanced tuberculosis and a history of depressions and mild phobic reactions. Her extremely debilitated condition reacted favorably to the drug, her weight increased rapidly, and her mood became friendly and cheerful. However, in the course of treatment, her psychological gains decreased and gave way to depressions and mood fluctuations. Although she took her medication faithfully for months, she appeared to resent treatment and the therapist. Her physical improvement was maintained.

Case 6: M. W., female, age 50, was admitted for the first time in an extremely poor condition. Her psychiatric diagnosis was involutional psychosis in partial remission and alcoholism. As a result of iproniazid treatment, her appetite and sleep improved, her craving for alcohol diminished. However, she was unable to maintain this improvement for more than three months and gradually reverted to her drinking habits. She had to be discharged for disciplinary reasons.

Case 7: R. W., male, age 44. This was the patient's first admission although his tuberculosis was of a chronic and extensive type. At the beginning of treatment with iproniazid, weight and vitality gained steadily, but as treatment progressed, subtle changes in his behavior were noticed by the medical staff. Although he claimed that he was feeling perfectly comfortable, he was described by others as being irritable and argumentative, especially toward visitors.

Case 8: V. G., female, age 58. This was the patient's first admission for tuberculosis. She was very debilitated and in danger of developing fatal complications. Her mental condition could not be evaluated due to language difficulties, but there was a rather obvious lack of concern about her illness. Her behavior in the hospital was normal except for the period under iproniazid. Her response to the drug was very favorable in terms of physical and psychological improvement. In the second month, however, she became quite arrogant and vociferous about a multitude of physical complaints. This condition changed to agitation and then to a state of mental confusion. The patient had lues in 1943. Although her serology was negative, a latent luetic involvement of the central nervous system might have predisposed her to iproniazid toxicity. The drug was discontinued, and her mental condition returned to normal in a few days.

Case 9: L. A., female, age 48, was admitted for the first time for tuberculosis. Her disease was far advanced and her general physical condition cachectic. In the first psychiatric interview, she was depressed and tearful. She attributed her emotional disturbance to physical discomfort but denied the existence of neurotic manifestations in the past. Later on she admitted having always been temperamental and easily provoked to anger. She saw nothing unusual in this type of behavior and expected other people to accept her outbursts without becoming upset. Her physical condition showed a dramatic improvement under iproniazid and her mood displayed a parallel change for the better. Her weight increased from 87 lb. to 110 lb. in three months. In the fourth month of treatment, her elation changed to aggressiveness, and her attitude toward the hospital, which was basically suspicious, became frankly paranoid. She expressed suicidal ideas and created serious problems on the ward. The immediate withdrawal of the drug precipitated a period of depression which lasted about a week. This episode was climaxed by a dream in which she was all alone in a desolate and deserted place. Since discontinuing the drug, episodes of depression and agitation recurred frequently, yet none of these relapses approached the episode just described in severity and duration.

Case 10: B. S., male, age 37, was first hospitalized for tuberculosis in 1935 and was re-admitted 19 years later with extensive disease and in poor physical con-

dition. In the pre-treatment interview, he tried to be very pleasant and cooperative, yet he could not conceal a certain arrogance and superciliousness. In talking about the circumstances of his hospitalization, he showed an unwarranted optimism and an unrealistic approach to life. He described himself as being well adjusted in all life situations but at the same time admitted that his family and friends regarded him as nervous and temperamental. Furthermore, he had been troubled by dispepsia and anorexia since he was hospitalized the first time, and was willing to admit that these disorders were aggravated by irritations and family problems. Iproniazid was administered to improve his physical condition. His appetite became normal, and his dispepsia cleared completely. He appeared to be well satisfied with the treatment, and every time he saw a doctor he asked him why the drug could not be given to every patient in the hospital. This state of elation gave way to restlessness, insomnia and loss of potency. The drug was reduced from 150 mg. to 50 mg. a day, but the latter dose proved ineffective as anorexia and dispepsia returned. The dosage was then increased to 100 mg. which was maintained until treatment was discontinued by the patient. The reason given for not wanting further treatment was a return of impotence. Prior to termination of treatment, he had many grievances against the physicians and often complained about errors made in the interpretations of his chest plates. He also claimed that he had been admitted to the hospital by mistake. This arrogance persisted for a few weeks until he was discharged, but a few months later at the follow-up clinic, he presented a radically different picture. He was apathetic, deeply concerned about his chest condition, physically debilitated and losing weight steadily. Iproniazid was reinstituted at his request. His appetite improved, and his state of mind changed from one of apathy to one of optimism. This change was confirmed by his wife. Interestingly enough, he lost his ability to maintain an erection in the sex act as in previous periods of treatment, but in spite of this, he insisted on continuing treatment with iproniazid. Apparently the change of environment was sufficient to reduce his emotional investment in his sexual potency and to give him a different orientation toward treatment with iproniazid.

Comments on Group II—All the patients in this group displayed a biphasic response to the drug with considerable variation in individual reactions. There was an initial state of relaxed and friendly cooperation which was followed by a trend toward overactivity, excitement and aggressiveness. In addition, one patient (case 8) became confused and disoriented, while another patient (case 10) exhibited paranoid thinking and might have become frankly psychotic had not iproniazid been discontinued. Wiedorn and Ervin (23) described a similar syndrome and sequence of events in their report on psychoses due to iproniazid and isoniazid. Although the personalities in this group of patients were not too well known, all the patients had two outstanding psychological features in common: a feeling of inadequacy and a need to hide it. This was evidenced by a great dependence on the hospital and by an equally great need to minimize fears connected with the disease. When this precarious equilibrium was upset, arrogance, hostility, externalizations and excessive demands on the environment came to the surface. The behavior of these patients in the course of iproniazid treatment was very similar to hypomanic states preceding psychotic reactions.

Group III—patients with irregular patterns of behavior.

Case 11: R. T., female, age 32. This patient was admitted to the hospital for the first time with moderately advanced disease. On admission, she was underweight, anorexic and somewhat debilitated. In the initial interview with the therapist, she admitted having been irritable, fearful of darkness and a poor eater all her life. In subsequent interviews, she also described ideas of reference, persecutory trends as well as many obsessive rituals. Very few personal data were obtained from her, but it was learned from other sources that she had been an erratic, unpredictable individual who could not hold a position for any length of time. She had a common-law relationship to a man who at the time of her hospitalization was serving a jail sentence. This clinical picture suggested extensive psychopathology, and therefore a diagnosis of schizophrenia appeared to be justified in this case. In the first nine weeks of treatment with iproniazid, there was a rapid increase of weight from 95 lb. to 114 lb. accompanied by an improvement of her general physical condition. During this period, she was uncommunicative and elusive and appeared to have little insight into her emotional state so that other sources of information were used to evaluate the effects of the drug. As treatment progressed, she was described as being troublesome and difficult on the ward. Furthermore, regressive features like pouting and picking of her skin became apparent in the fifth week. To avoid the danger of a psychotic break, iproniazid was reduced from 200 mg. to 100 mg. and finally to 50 mg. a day, but since there was no improvement of her ward behavior, the drug was discontinued. In the period that followed she quieted down considerably and became more communicative in the interviews. She stated, for instance, that she had felt relaxed and comfortable with people at the beginning of treatment with iproniazid, but that she had become aggressive with her roommates in subsequent stages of therapy. This description was in perfect agreement with observations made by others on the ward. About four weeks after withdrawal of iproniazid, she displayed an entirely new mental picture. She talked irrelevantly, grimaced and giggled in a typical hebephrenic fashion.

When this episode subsided a few days later, she was depressed and said that under the drug she had been a different person with "no fears or nothing to trouble me." Iproniazid was reinstituted cautiously to check a steady weight loss and an increasing depression. During this second phase of treatment, which lasted three months, her behavior in the interviews ranged from complete mental disorganization to a sedate and communicative relation to the therapist. Finally she decided to discontinue treatment without giving a logical explanation. At first she was satisfied with this decision as she was "closer to myself and less excited with people." However, this did not last very long, and she again felt persecuted by people, very self-conscious and uneasy in the presence of men. When she was on pass in the city, she avoided certain neighborhoods for fear of meeting people with menacing faces. She indicated again that under iproniazid she had been a different person capable of expressing herself, subject to temper outbursts, but not given to prolonged periods of morbid brooding. Her episodes of manneristic behavior became less frequent, but her mood became more depressed and withdrawn. Therapy with iproniazid was not reinstated as she was in the process of being discharged and could not be trusted with the drug on an out-patient basis. She was seen in the follow-up clinic three, six and seven months following her discharge. She was vague, defensive and superficial, but revealed no psychotic content. In conclusion, this patient prior to therapy displayed a withdrawn rigid self-preoccupied attitude with little spontaneity, typical of a schizophrenic in remission. Iproniazid seemed to have suppressed her narcissistic structure and uncovered an underlying emotional detachment which permitted her to act out her aggressive impulses; this detachment then led to emotional dissociation and finally to disorganized psychotic behavior. During this period she had little desire to communicate her experiences as she was completely alienated from herself. It was only in periods of withdrawal of the drug or of reduced medication that she had any awareness of her inner experiences or any desire to reveal them to the therapist. The depression and anxiety of the weeks preceding her discharge were probably caused by the reappearance of a profound feeling of inadequacy. In the follow-up clinic several months after treatment was discontinued, she was again self-absorbed, withdrawn and lacking in spontaneity. The same symptomatology might have occurred spontaneously, but this seems unlikely as the sequence of psychological reactions was related to various events in the treatment with iproniazid.

Case 12: F. R., female, age 25. This patient was admitted for the first time with mild tuberculosis and minimal subjective symptomatology. She was of unusual interest because she was eager to receive psychiatric care and therefore willing to talk about her emotional experiences even before treatment with iproniazid was contemplated. Her main problems at the time of her admission were difficulties in adjusting to the hospital routine. However, she had enough insight to know that this was not a new experience for her as she had had difficulty in accepting restrictions in the past. She indicated a strong reluctance to becoming involved in lasting human relationships or in any situation that, in her opinion, would have placed unreasonable demands on her. Prior to hospitalization, she held a position as a nurse but lost interest in her work and withdrew into a world which was unsatisfactory but free of coercions.

Iproniazid was prescribed for her due to anorexia and loss of weight. At the beginning of treatment she did not react with the feelings of exuberance so characteristic in previous cases; instead she developed apathy, somnolence and extreme fatigue. The dosage of the drug had to be changed several times until 100 mg. a day was found to have the desired stimulating effects on her appetite and emotions. When this effect was achieved, other patients and friends told her that she was a different person, more outgoing, more talkative and much more energetic. She had been unaware of these outward changes but had gained some insight into her personality. She realized how withdrawn and self-conscious she had been in the past. Much to her surprise she discovered that she was now able to wear old and ill-fitting clothes without feeling uncomfortable. A situation of this type would have been inconceivable only a few weeks before. Furthermore, she had developed a sexual attraction to a male patient, while heretofore she had been frigid toward the opposite sex and capable of homosexual relations only. A period followed in which she felt empty and detached, yet her friends in the hospital and on the outside thought that she had become much more aggressive and at times quite meddlesome. In the third month of treatment, she left the hospital on an impulse and several hours later returned to her ward greatly depressed. Since there was some indication of her becoming suicidal, it was deemed necessary to decrease the dosage of iproniazid for a few weeks. In this period of reduced medication, she became somewhat overactive. When the dosage was increased again due to loss of weight, she had a phase of depression during which she developed new insights into her personality. She saw for the first time how dependent she had made herself on other people and how necessary it was for her to conform to other people's wishes. This situation in turn caused her to put unreasonable claims on other people and to react with anger and hostility whenever these claims were frustrated. She had a dream in which she went to a store to buy a pair of earrings. The salesman handed her the merchandise, but she made no effort to reach for it. The earrings fell into a toilet bowl on which she was sitting, and she demanded that the salesman return her money. This dream seemed to reveal the passive quality of her claims and the unreasonableness of her behavior in response to frustration. In spite of her frequent depressions, she was anxious to continue treatment with iproniazid. Due to an oversight, she failed to take the drug for three days, and as a result she became tense and felt very inadequate. When she was told that the drug would be discontinued before her discharge, she became sulky and hostile toward the therapist. A few days after the drug was with-

drawn, she made the following statement: "Under marsilid I used to think about my problems, now I brood over them." She was seen at the follow-up clinic several times and was again treated with iproniazid for about two months in order to check anorexia and apathy. Her physical condition responded to the drug favorably, but her reactions to people became unpredictable. As long as she was under supervision in the hospital, she was able to cope with her changes of mood, but on the outside she was threatened by other people's reactions. Iproniazid was therefore discontinued. This case was another example of how the effects of a certain type of treatment could be modified by a change of external situations.

Comments on Group III—The outstanding feature in these two patients was the rapid psychic movement in a relatively short period of time. This could be attributed to a reduction of narcissistic defenses resulting in a release of conflicting neurotic trends and anxiety provoking insights. The first patient also exhibited a psychotic reaction while the second patient reacted with a painful liberation of basic personality trends. In both instances, the loosening of rigid personality structures was responsible for a good transference with the therapist in certain stages of the treatment.[4]

Discussion

One of the goals of this study was to find a safe and effective method of administering the drug. This goal was achieved only partially since in 20 patients, only four could tolerate iproniazid without untoward psychic side effects for an indefinite period of time. Six received the drug for several months with satisfactory results but needed constant observation, and two developed mental reactions which were severe enough to require immediate termination of treatment. Furthermore, eight patients failed to show the desired response to iproniazid due to early physical complications or for other reasons to be discussed elsewhere. On the other hand, this study was successful inasmuch as the 12 patients discussed in this paper benefited physically and most of them emotionally from the drug. None of the patients treated developed irreversible psychoses. In some very debilitated patients, iproniazid achieved a quick improvement of their physical condition, and in at least one case it might have proved to be a life-saving procedure.

The practical application of this drug in the field of physical medicine will not be the object of further discussion since the main purpose of this paper was to investigate the psychological reactions to the drug. An effort will be made now to interpret the effects of iproniazid psychodynamically and then to compare the compound to other substances now being used for therapy and research in psychiatry.

Iproniazid is a stimulant but also a tranquilizer. The latter effect was noted in every patient but its duration varied considerably. In better integrated patients the period of tranquility lasted indefinitely and was characterized by a positive attitude toward life and by healthy human relationships. The gain in these cases was both physical and psychological. A similar response was observed in the neurotic patients too, but it was obscured by subsequent events. In the initial stages there was a definite lessening of anxiety manifested clinically by a feeling of well being, increased appetite and ability to concentrate on new activities. This could be attributed to a repression of neurotic guilt feelings, of fear of inadequacy or of narcissistic preoccupations. In this period, iproniazid acted as a tranquilizer. However, the action of the drug did not end here because the removal of inhibiting forces uncovered more basic neurotic trends. Passivity and detachment became particularly evident in the two neurotic individuals of the first group. They were able to present a healthy facade once neurotic preoccupations with family problems were removed, but at the same time they became indifferent to responsibility and incapable of a meaningful relationship to the therapist. In the second group, iproniazid was probably effective in minimizing paralyzing feelings of inadequacy. Once the patients were freed from these inhibitory forces, they felt free to act in an arrogant and aggressive fashion. In this respect the effects of the drug were similar to the endogenous processes leading to expansive moods or manic conditions. In these two categories, there was a very definite physical improvement due to an increase of vitality but only a symptomatic gain from the psycho-

[4] A rapid mobilization of inner conflict is, in the author's opinion, most unusual in patients with self-conscious, narcissistic symptomatology. Iproniazid might be a useful adjunct to therapy in patients with this type of psychopathology.

logical point of view. Finally, in the third group, the reduction of narcissistic self-consciousness permitted the individual to act out deeply repressed personality needs. This produced severe mental aberrations as well as movement toward mental health. In conclusion, iproniazid can act as a stimulating, tranquilizing or psychosomimetic drug depending on a variety of conditions, such as pre-existing personality factors neurotic defenses, physical condition and environment.

In comparing the pharmacological effects of iproniazid with those of reserpine, lysergic acid, amphetamine and adrenochrome, one finds some similarities. Furthermore, all these drugs affect the metabolism of serotonine or adrenalin in one way or another. Iproniazid has in common with reserpine the capacity to reduce panic states, obsessive ruminations, depression, psychosomatic manifestations of anxiety, etc. Both drugs also lower the blood pressure. On the other hand, hyperactivity, excessive appetite, resistance to fatigue are outstanding features in iproniazid treated patients, while they are seldom observed in neurotics or borderline cases treated with the ordinary doses of tranquilizers. Moreover, excessive dosage of reserpine causes extrapyramidal symptomatology, while iproniazid almost always produces hyperreflexia. Lysergic acid produces euphoria, paranoid reactions, distortions of time perception and feelings of racing which resemble those described by some of the patients in this investigation. On the other hand, visual hallucinations and illusions, feelings of depersonalization so characteristic of the reactions to lysergic acid (13) are not too common in patients receiving iproniazid. Of more than 40 patients studied by the author, only one patient had visual hallucinations and another patient psychosomatic delusions. Many patients treated with iproniazid experienced a detached attitude but none of them a real feeling of depersonalization. Iproniazid reactions are in many ways similar to those of amphetamine. A patient reported in a previous paper by the author stated that she had very similar pyschological reactions under iproniazid and under Dexedrine. However, the former drug is a powerful stimulant of the appetite while the latter has the opposite effect. In reading the paper by Hoffer *et al.* (8), the author was struck by the lack of insight and general negative attitude displayed by a volunteer injected with adenochrome. This type of reaction was often observed in patients investigated in this paper.

In conclusion, there are certain similarities and many differences in the psychic effects of iproniazid, reserpine, lysergic acid, amphetamine and adrenochrome. From a practical point of view, iproniazid compares favorably with reserpine as regards symptomatic treatment of certain agitated neurotic states. However, the greatest value of this drug lies in its ability to create a sustained feeling of vitality and well being in debilitated and depressed patients. In this respect, the effects of iproniazid are, in the author's opinion, unsurpassed by any other drug.

Summary

1. Iproniazid, an anti-tuberculous drug, stimulates mental processes and also creates psychopathology. The typical reaction to the drug consists of an increase of energy, appetite and resistance to fatigue. Mental aberrations are diversified and are, in most cases, characterized by overactivity, insomnia, agitation and paranoid trends.

2. In this study 20 debilitated tuberculous patients were treated with iproniazid for the purpose of improving their depressed physical and mental condition.

3. In order to minimize psychological complications and physical side effects, the dosage ordinarily used for the treatment of tuberculosis was reduced and frequently readjusted in the course of treatment.

4. Of the 20 patients treated with iproniazid, 12 showed the desired response to the drug and gained an average of 20 lb. Of the 12, four exhibited no untoward psychic manifestations after several months of treatment, six became behavior problems but could tolerate the drug for many months, and two developed mental disorders which required immediate termination of treatment. None developed lasting psychoses.

5. Twelve patients (60 per cent of the series) derived considerable benefit from the treatment although in some cases it was only temporary. At least two patients with acute

anxiety and phobic reactions became symptom-free as the result of iproniazid therapy.

6. The psycho- and pharmacodynamic effects of the drug were discussed. Iproniazid was also compared to reserpine, lysergic acid, amphetamine and adrenochrome.

7. The stimulating effects of iproniazid, especially on physically and mentally depressed individuals, were emphasized.

This work was done in the Division of Pulmonary Diseases of Montefiore Hospital, New York, under the auspices of the Jesse Michel Memorial Fund.

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BOOK NOTES AND REVIEWS

Books received are acknowledged and given a brief description in this section. Selections serving a variety of interests will be made from these for a more extensive review, as far as space will allow.

BOOK NOTES

Wallis, H. R. E. MASKED EPILEPSY. [Baltimore: Williams & Wilkins Co., Edinburgh and London: E. H. S. Livingstone, Ltd., 1956. Pp. 51. $2.50.]

This little book presents the theory with some evidence that many nonconvulsive periodic disorders in childhood are due to an epileptic constitution or represent "masked epilepsy." Recurrent headache, cyclic vomiting, night terrors, sleep walking, temper tantrums, and periodic colic, are among the disorders discussed and it is interesting to note that of the 16 patients with masked epilepsy, 14 had EEG's indicative of epilepsy.

Several aspects of convulsive states are described and idiopathic epilepsy is defined with diagnostic methods and therapy included.

Students of epilepsy may not agree with all that is written here since adequate proof seems to be lacking in some of the pronouncements, however the concept is thought stimulating and the monograph is well worth reading.

McCarthy, D. J. and Corrin, K. M. MEDICAL TREATMENT OF MENTAL DISEASE. [Philadelphia: J. B. Lippincott Company, 1955. pp. xx + 653. $12.00.]

The first paragraph of the Preface of this unique book affords the orientation and focus of practically the entire text. To quote "Mental diseases are caused by physical disorders, and they respond to scientific medical treatment the same as all other disease, in consideration of the special nature and the function of the brain, and the nervous system. If mental patients are to be treated properly, as medical and not as psychological problems, the fundamental rules of medicine must be applied. In order to do this, it is essential that they be treated as medical problems, not as mental cases as in the past."

While it is obvious that such an all inclusive statement will not stand up under scientific scrutiny and analysis, the intention is apparently to direct attention to certain neglected areas in psychiatry and to stimulate attempts to discover the somatic aspects of mental disorders. Since, with a few exceptions, the physical disorders described as causative of mental disorders may and do occur extensively without any serious or at times even without obvious mental disturbance, some other as yet unknown determinants are in the situation.

The text will serve as an excellent foundation for future study and research as the neuropsychiatric descriptions are fairly inclusive and informative, and the therapeutic procedures for physiologic tensions, visceral disorders, alcoholism, geriatric conditions and many other conditions are practical, resulting from the long experience of the authors. The book is the best of its type to appear and should be in every neuropsychiatric library.

Jones, Ernest. SIGMUND FREUD FOUR CENTENARY ADDRESSES. [New York: Basic Books, 1956. Pp. 150. $3.75.]

Among the numerous books and articles that have been written or published in honor of Freud's birth, this collection of lectures by a man so intimately associated with psychoanalysis and its creator over many years, is outstanding in authenticity, instructive in content and presented in a masterly style.

The first address in the book is entitled "The Nature of Genius" delivered before the New York Psychoanalytical Society and Institute on April 23, 1956: the second "Our Attitude Towards Greatness" was given before the American Psychoanalytical Association at the Chicago Meeting April 28, 1956: the third "Psychiatry Before and After Freud" was presented at a joint session of the American Psychiatric Association and the American Psychoanalytic Association in Chicago April 30, 1956 and the fourth "Sigmund Freud: The Man and His Achievements" was delivered

over the network British Broadcasting Corporation in London on May 6, 1956. The volume closes with a eulogy which serves as an overall evaluation of Freud's character and talents as well as his contribution to the understanding of the mind.

Since this book is packed throughout with valuable information and comments, to select portions for detailed review would serve little purpose. Dr. Jones, as a biographer of Freud and his times, is well known and admired for this service as well as for his own numerous contributions to psychoanalysis, therefore all those interested in this field should have a copy of this book in his library.

Clark, R. A. SIX TALKS ON JUNG'S PSYCHOLOGY. [Pittsburgh: The Boxwood Press. 1953. Pp. 84, 3 figures. $1.50.]

This small paper-covered book presents a brief but clear cut comprehensive account of Jung's principal theories and their practical applications. The six "talks" were presented to a group of physicians at the Western Psychiatric Institute at the University of Pittsburgh. They are on the following topics: (1) Libido Theory, (2) Ego Psychology, (3) The Unconscious, (4) Archetypes of the Collective Unconscious, (5) the Technique of Analysis and (6) Applications in Psychotherapy. There is a reference list and also a suggested reading list of books.

The attitude expressed by the author "I look forward eventually either to the reconciliation of all the different schools of depth psychology, or to the forming of higher, more developed concepts which will include the present ones" is now shared by most of the present-day progressive workers. This can be accomplished only by a liberal teaching of the similarities and contrasts in the tenets of the various "schools". This book will serve well as a quick review of the Jungian psychology for students in the psychological disciplines.

BOOK REVIEWS

Stevenson, George S., M.D. MENTAL HEALTH PLANNING FOR SOCIAL ACTION. [New York: McGraw-Hill Co., 1956. Pp. x + 358. $6.50.]

Dr. Stevenson needs little introduction as one of the leaders of the mental health movement in this country. The sub-title of this volume is "How to make the most of our knowledge and facilities for promoting better mental health". Margaret Mead, writing a short preface to this volume notes that "chapter after chapter of this book takes up with quiet, undramatic thoroughness, the issues, the questions, the practices and the plans which citizens, young professionals and young government specialists need to know about as they work in the developing fields of mental health." This is what this book is about, and for whom this book was written. As the author says "the contents of this book constitutes its message." It is a distillation of a life-time of effort, thinking, and acting in this field.

The book is divided into five parts. The first covers certain basic considerations of range, meaning, history, agencies, and planning.

The second part covers the various services, private and public, presently active in this field, including courts, hospitals, V.A., U.S.-P.H.S., and many others. In a third part entitled "The Protection of Mental Health, there is a pregnant enough discussion of the uncertain but vital question: prevention. In a fourth part the question of what can be done, and who can do it is ventilated. The social, church, and family influences and efforts are analyzed. In a fifth and final section, the vast and complex consideration of program execution in its broadest sense is discussed.

The author feels strongly that there is more scientific knowledge and technique for dealing with mental illness than is now being used. It is a great challenge to the public and to the professional workers in this field to narrow this gap if possible. It is the author's purpose to show us how we can make use of this knowledge. He gives careful attention to the mental hospitals and makes concrete suggestions and proposals of how their contribution to mental health could be increased. The better and more fruitful uses of the forces, wealth, and power of the government (county, state, and federal) is carefully analyzed. No better book could be placed in the hands of people interested in the

great and grave problem of mental health than this one written by a clear, careful, and responsible expert.

JOSEPH ZINKIN

Opler, Marvin K., Ph.D. CULTURE, PSYCHIATRY, AND HUMAN VALUES. [Springfield, Illinois: Charles C Thomas, 1956. Pp. xiii + 242. $6.50.]

This work is a product of the blending of social anthropological knowledge with psychiatry. The author is markedly influenced by the late Thomas Rennie at Cornell who was the first professor of what he liked to call "Social Psychiatry". There is a good deal to be said for this approach, if not on the clinico-therapeutic level, then most certainly on the theoretical level. The total cultural setting of a patient in psychiatry if carefully documented and correlated with other cultures (or contrasted for that matter) can only increase our knowledge of the factors of health and illness and contribute to the general knowledge of man. This is a big order; and Dr. Opler outlines or suggests projects and possibilities for research that might need fifty years and great sums of money to accomplish. Perhaps some day the necessary data will be available.

Opler has, in Rennie's words of the preface "ranged widely through the whole field of cultural anthropology and psychodynamics bringing to bear upon the reported studies a fresh and critical point of view, adhering to no particular school. He has also had the courage to scrutinize and challenge some long standing convictions and hypotheses. His own synthesis of the material is original and provocative." That has been the author's aim—the accomplishment is something else again. Opler breaks a good many lances against orthodox Freudians, against many of his anthropological colleagues, and others. His challenges, hypotheses, and syntheses are generally not extremely startling nor particularly original. They have been voiced by many others before him.

Since the reviewer is no anthropological expert, he can not judge the validity of much of the author's objections or his aims. As a psychiatrist, the reviewer finds what he has to say interesting, stimulating and often valuable as leads to newer areas of related fields which would not perhaps be otherwise made available. Some of the points the author raised might be mentioned at random to indicate the flavor of the thinking and the writing. He makes the point that before experiences are integrated "within" they are subject to the greater statistical weight and frequency of socio-cultural group phenomena." (page 20) "There is no reason to feel that a culture may not be studied and diagrammed for ambiguities, conflicts in life-course, obvious stress features, and handicaps to maturation and healthy development." (page 23) The author indicates that epidemiological studies lack articulation and significant connection between clinical studies and socio-cultural studies (page 25). He considers the Freudian view a "wholly mechanistic conception of these dynamics." One could stop and debate this question far into the night.

Nevertheless this book gives a stimulating mass of material, not too well digested; but the literature in his field is usefully reviewed. There is an excellent and carefully utilized bibliography. It must be said that the style of writing is simply barbarous.

JOSEPH ZINKIN

Grinker, Roy R., M.D., Editor. TOWARD A UNIFIED THEORY OF HUMAN BEHAVIOR. [New York: Basic Books, Inc., 1956. Pp. xi + 375. $6.50.]

Nineteen specialists in the fields of psychiatry, sociology, anthropology, biology, philosophy, and history have collaborated in the making of this book. For the past five years these various men (John P. Spiegel, Shakow, Jurgen Ruesch, T. Parsons, F. Kluckhorn, J. P. Toman, L. K. Frank, Karl Deutsch, Laura Thompson, Alfred E. Emessan, Jules Henry, Howard Liddel, Charles Morris, Anatol Rapoport, Paul A. Weiss and A. Shimbel) have been carrying on what has now come to be familiarly known as "inter-disciplinary studies", working together at Chicago in the effort to find a meeting ground of concept and terminology upon which a new unified theory of human behavior may be built. Although some

ten such conferences, meetings, and discussions have been held, this volume reports the results of only the first four.

In a brief exposition each expert attempts to set forth the results of his particular specialty's advances and his attempts at a theoretical integration by drawing on recent advances. This exposition is then thrown open for discussion, modification, argumentation, etc. in a seminar fashion by the other specialists present. This particular volume centers about the fields of language, symbolic representation, communication, the question of systems (social, cultural, anthropological, etc.), native orientations, homeostasis, and the question of systems of group relationships; finally in the fourth conference the question of the statistical boundaries and the relationships between socio-cultural and personality systems is discussed. The transcripts have, of course, been condensed greatly for publication.

The problem these specialists have undertaken to discuss is an immensely vast one, complicated, confused and uncertain. There is no chance for another fifty years of any such goal being attained. This much is obvious. But one must begin by beginning. It is also obvious that the fields of science are beyond the capacities of any one man to know. But this reviewer feels very strongly that the "unified theory of human behavior" will come not from a collaborative effort, but from the brain of a genius or geniuses, basing their thought on the best work and the most significant advances of the science of their time. Americans are great advocates of the "team", the "collaborative effort", etc. Yet our greatest steps forward have essentially been the steps taken as a result of the thinking of a single great man. Nonetheless, as a lesser effort by men of lesser talents much can be learned from one another by this "seminar" method, this inter-disciplinary exchange of ideas and methods.

This present volume makes interesting and stimulating reading in parts. Yet the total impression is that the parts are greater than the whole. Most of the papers are heavily ballasted with technical jargon of a dozen different fields. The discussions are often at cross purposes, and in the end the theory being sought for is like the Cheshire Cat—the smile (or the hope of a unified theory of human behavior) is all that remains. A hundred interesting and even fascinating insights are revealed, but somehow the whole thing gets just about nowhere. The time is not yet ripe. In this writer's opinion the man, the brain, the genius to do the job have not yet appeared (the brain may well prove to be several sets of brains; the genius may well have to be a series of outstanding codifiers and system-builders).

JOSEPH ZINKIN

BOOKS RECEIVED FOR REVIEW

August, 1956

JOHNSON, W., ET AL. *Speech Handicapped School Children*. Revised Edition. Harper and Bros., New York, N. Y.

LIEBMAN, SAMUEL (Ed.). *Management of Emotional Problems in Medical Practice*. J. B. Lippincott Co., Philadelphia, Pa.

SNELL, GEORGE D. (Ed.) *Biology of the Laboratory Mouse*. Dover Publications, Inc., New York, N. Y.

STIERLIN, HELM. *Der Gewalttatige Patient*. S. Karger A. G., Basel, Switzerland.

STOKES, ADRIAN. *Michelangelo, A Study in the Nature of Art*. Philosophical Library, Inc., New York, N. Y.

STOPES, MARIE. *Sleep, The Way to Sound and Healthful Slumber*. Philosophical Library, Inc., New York, N. Y.